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MYOSITIS OSSIFICANS *

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Cases of circumscribed myositis ossificans have been reported with increasing frequency during the last few years. It is probable that the condition is more common than even the large number of reported cases would indicate, for when ossification is not extensive and not in such a position that the motion of a joint is limited or a definite disability occurs, a physician is not consulted. The circumscribed form of myositis ossificans is of special interest to the surgeon because of its association with dislocations and fractures; because of the difficulties sometimes encountered in making a differential diagnosis, and because of the relation of periosteal stripping and displacement to heterologous bone formation.

Three forms of circumscribed myositis are recognized:

1. The traumatic:
   (*a*) Occupational myositis ossifications due as a rule to repeated injuries.
   (*b*) Myositis ossificans due to repeated injuries not sustained in pursuit of an occupation.
   (*c*) Myositis ossificans due to a single severe injury.
2. The nontraumatic form, in which even single or repeated injuries can be excluded.
3. The neurotic form, usually associated with arthropathies or fractures occurring in tabes, dementia or syringomyelia.

Circumscribed myositis ossificans developing in clean incised abdominal wounds forms an interesting study. In some of these cases, there is no possibility of periosteal injury or displacement, and therefore the bone must have formed as the result of metaplasia of connective tissue cells. In an article published by Küttner in 1910, dealing with circumscribed ossifying myositis, but five cases are recorded in which the lesion developed in a wound caused by a sharp instrument producing a clean incised or punctured wound. Most of the cases develop after a severe injury caused by blunt force in which considerable laceration of muscle fibers associated with hematoma formation occurs.

Bender reports a case in which bone developed in the biceps brachii following a punctured wound from a darning needle; Schwarz, one in which bone developed in the glutei muscles after they were cut with glass, particles of which were found imbedded in the bone. Werner has described an ossifying process in the biceps brachii after a punctured wound. Cranwell has described two cases in which bone developed in muscles following incised wounds. In one of these, the patient was whittling, when the knife slipped and pierced the inner part of the thigh, passing through the adductor muscles. Considerable hemorrhage occurred, but the wound healed rapidly. After some months, a piece of bone of considerable size developed in the adductor muscles. This was removed later. The second case, reported by Cranwell, occurred in a man, aged 22. Three months before he was operated on, he sustained a stab wound of the left thigh, with considerable hemorrhage. The wound suppurated, and healed slowly. Soon a painful mass developed along the track of the stab wound. This mass, which proved to be bone, was later removed. It was attached to the femur by a broad base. These cases indicate that circumscribed myositis may, but rarely does, occur after clean incised wounds.

MYOSITIS OSSIFICANS IN THE ABDOMINAL WALL

I have observed two cases in which bone developed in incisions of the abdominal wall:

CASE 1.—A man, aged 27, for over a year before he was admitted to the hospital, had experienced from time to time an aching pain in the epigastrium. This pain usually developed early in the evening and lasted half an hour or somewhat longer. At times, the pain would come on at 1 or 2 o'clock in the morning and last two or three hours. Nausea was not associated with the pain and no vomiting had occurred. At first, bismuth relieved the pain. A few weeks before the patient entered the hospital, the pains were experienced during the day. Of late, the pain and distress had been almost continuous but had varied in intensity. The distress could be controlled to a considerable degree by a liquid diet. During the year, the patient had had several attacks of acute arthritis.

The general examination was negative except as regards the heart. The apex beat was in the seventh intercostal space, two finger breadths external to the nipple line. The impulse was heaving. A loud diastolic murmur was heard over the base, which was transmitted to the apex. The patient had aortic regurgitation, but compensation was good.

A test meal revealed no food retention. The total acidity was 95, free hydrochloric acid, 50. Occult blood had been found in the stool from time to time. June 1, 1917, a diagnosis of duodenal ulcer having been made, a posterior no-loop gastro-enterostomy was performed, the pylorus being temporarily occluded by plication with two silk sutures. The postoperative course was uncomplicated, no vomiting or distress being noted. There was some fever, the temperature reaching 102 F. on the third day. It subsided quickly and did not recur. During this rise in temperature, there was no inflammatory reaction in the incision. The fever was thought to be due to bronchitis, never severe, from which the patient suffered at this time.

The patient left the hospital thirteen days after the operation, much relieved, the pain and distress following the taking of food having completely disappeared. After his return home a cough developed which bothered him considerably.

* Read before the Western Surgical Association, Dec. 8, 1922.

Three weeks after the operation, he noticed some tenderness in the scar, so marked that he could not wear a belt without considerable distress.

Seven weeks after the operation, a definite mass measuring a finger's breadth or more in width could be felt the entire length of the scar. This mass was of the consistency of bone, and in the roentgen ray cast a definite shadow. This mass was not removed, and naturally the criticism may be made that we cannot consider it as bone without a histologic examination; but it had all the characteristics of bone on physical examination. The patient was finally lost sight of, and the final outcome cannot be given. The mass was decreasing in size.

CASE 2.—*Myositis ossificans developing in the muscles of the lower abdomen following a suprapubic prostatectomy.* A man, aged 70, admitted to Dr. Bevan's service, Aug. 18, 1914, had had bladder trouble for four years, and complained of frequent and painful urination associated with retention. During the preceding April, the trouble had become aggravated, urination being extremely difficult, with only a few

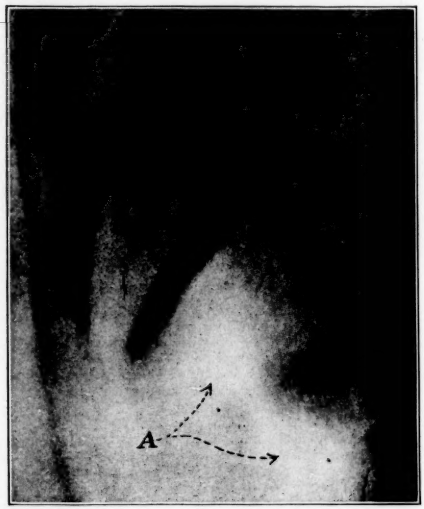

Fig. 1 (Case 1).—Appearance of bone developing in a clean incised wound of the abdomen. A gastro-enterostomy was performed for duodenal ulcer.

drops voided at a time. Soon after admission to the hospital, a suprapubic prostatectomy was performed. The suprapubic wound healed within a month without complications. Shortly after the wound healed, the patient noticed a mass which was not painful and gradually increased in size. The patient was well, but was troubled from time to time by painful urination. A cystoscopic examination, Aug. 29, 1915, revealed two small stones in the bladder and no projection into the cavity of the anterior bladder wall. The mass described above was apparently in the abdominal wall and did not involve the bladder.

Sept. 2, 1915, this mass, which proved to be bone to which was attached degenerating fat and muscle, was removed. Ossification had occurred in the tissues of the abdominal wall following healing of the suprapubic wound.

Cases of myositis ossificans developing in abdominal wounds have been reported by Rubesch, Röpke, Hannes, Legene, Sabjaknia, Capelle, Jones, Coenen-Wollenburg, Benelli, Merendorf and Strassberg. In seven of the eleven cases reported, an operation was performed for gastric ulcer, two of which had perforated. Some of the incisions were closed with silk and some with catgut, and the wounds in most cases, one excepted, healed by first intention.

In a case observed by Jones, a man, aged 30, was operated on for a right inguinal hernia, which had developed, apparently, as the result of jumping. The wound healed by primary intention, the patient remaining in bed sixteen days. Five months after the operation, a mass developed under the scar, which was painful and not attached. Eleven months after this mass was first noted, it was removed. On histologic examination, it proved to be bone.

Jones believes that at the first operation the pubic bone was injured by the needle; that a few osteoblasts were carried into the soft tissues, and that these found a good culture medium, perhaps in a blood clot, giving rise to bone formation in the hernial scar.

These cases of myositis ossificans occurring in clean incised wounds of the abdomen are of unusual interest, because they would seem to indicate that bone can form as the result of metaplasia of connective tissues containing no osteogenic elements. It is stated by some that in these cases there is always the possibility of periosteal injury associated with displacement of periosteal strips or osteoblasts, but in both of the cases observed by me such injury could be definitely excluded. In the myositis developing after a gastro-enterostomy, a linea transversa was incised. This is the remains of a rib that at one time extended toward the median line, but we do not know whether or not the lineae transversae contain osteogenic elements. The effect of acid secretion on fascia and muscle and its relation to bone formation is raised by the second case in which bone developed in the suprapubic wound. It has been frequently demonstrated by Phemister and Strauss that free facial transplants used to repair defects in the urinary bladder and stomach or in the ureter become transformed into bone, a metaplasia of connective tissue occurring. Bone probably formed in the suprapubic wound as the result of the action of acid urine on fascia. It is surprising that the greater number of cases of myositis ossificans in abdominal wounds have developed after gastro-enterostomies or stomach resections, and the relation of acid secretion to bone-forming myositis is naturally suggested. It is difficult, however, to see how any great amount of gastric juice could come in contact with such a wound during the performance of gastro-enterostomy.

Although the factors concerned in the development of myositis ossificans in clean incised abdominal wounds cannot be determined, such cases do indicate that bone can be formed as the result of the metaplasia of connective tissues, no osteogenic tissue being present.

Strauss' statistics dealing with 127 cases of traumatic myositis ossificans show the following anatomic distribution: sixty-four of these occurred in the flexor muscles of the upper arm, the brachialis anticus being the one most frequently affected; forty-three occurred in the quadriceps femoris; thirteen, in the adductor muscles of the thigh; two, in the gluteal muscles; one, in the muscles of the ball of the thumb, and one in the temporal muscle.

MYOSITIS OSSIFICANS FOLLOWING POSTERIOR DISLOCATIONS OF THE ELBOW

Myositis ossificans following injuries about the elbow develops most frequently after posterior dislocations.

CASE 3.—F. W., a man, aged 36, admitted to the Presbyterian Hospital, May 16, 1910, had had a fall, Sept. 10, 1909,

after which he was mentally deranged, until the middle of the subsequent December. During this time, he complained of pain in the right arm. No definite history of the way in which he was injured could be elicited because of his mental state. When he became mentally clear, it was discovered that he could not bring his hand to his mouth or flex the forearm fully. The elbow caused no especial pain, but was

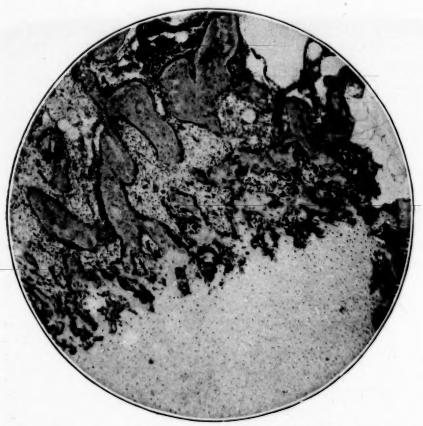

Fig. 2 (Case 2).—Section of bone which developed in suprapubic wound following suprapubic prostatectomy. The relation of acid secretions and excretions to bone formation in fascia and muscle must be taken into consideration in this case.

stiff. The right forearm could not be flexed beyond an angle of 120 degrees. A roentgen-ray examination made at this time revealed a shadow anterior to the elbow joint and the lower third of the humerus that was suggestive of myositis ossificans. An operation was performed, May 16, 1910. An incision was made between the brachioradialis and the brachialis anticus. The musculospiral nerve was exposed and retracted. The fibers of the brachialis were separated, and a bony mass, which was rather closely related to the humerus, was removed from its substance.

CASE 4.—W. B., a man, aged 28, admitted to the Presbyterian Hospital, April 28, 1913, had fallen 20 feet, May 26, 1912, and sustained a fracture of the head of the right radius. According to his statement, he was operated on, May 28, at which time three pieces of bone were removed. A plaster-of-Paris cast was applied, and was worn for three weeks. Splints were then worn for two weeks. After the splints were removed, massage and osteopathic treatment were employed twice a week until the patient entered the hospital. During March, a month before he entered the hospital, an anesthetic was administered three times and attempts were made to break up the adhesions. Impairment of motion at the elbow became more marked at each attempt.

A roentgen-ray examination made when the patient entered the hospital revealed a shadow in the brachialis anticus muscle; one in the olecranon fossa, and one over the olecranon process. A hard mass of the consistency of bone could be felt in the antecubital fossa.

An operation was performed, April 28, 1913. One incision was made in the right antecubital fossa and another posteriorly over the olecranon process. The capsule of the joint was exposed, and the bone and exostoses were removed.

CASE 5.—M. H., a girl, aged 12, admitted to the Presbyterian Hospital, April 3, 1910, had fallen and struck on the left elbow, three months before. A physician who was called said that the elbow had been dislocated. After some manipulation, the dislocation was reduced, and a sling, which was worn for one week, was applied. The patient did not regain full use of the elbow, and after six weeks she visited the Central Free Dispensary, complaining of inability to flex or extend the forearm. In addition to the dislocation, this patient had sustained, as the roentgen-ray examination revealed, a fracture of the coronoid process. An operation was performed, April 14. An incision was made between the brachioradialis and the biceps tendon. The musculospiral nerve was exposed and retracted. The fibers of the brachialis anticus were separated, and a mass the size of a walnut was removed from its substance.

CASE 6.—W. Q., a man, aged 26, admitted to the Presbyterian Hospital, March 8, 1915, for observation, had sustained an injury to the elbow, some weeks before, which, from the description, was probably a posterior dislocation of both bones. The dislocation had been reduced, but subsequently considerable limitation of motion was noted at the elbow-joint. After the accident occurred, considerable discoloration of the skin about the elbow was noted.

Examination disclosed that the motions at the left elbow joint were considerably limited. The bony relations of the joint were normal. A mass could be felt in the upper part of the antecubital fossa. This mass was hard, apparently fixed, and seemed to be surrounded by indurated tissue. A roentgen-ray examination revealed a definite mass. This was apparently not attached to the bone, although there was a small shadow more deeply situated which resembled somewhat a pedicle and might connect the larger shadow with the shaft of the bone. This patient was not operated on, as he was apparently improving. He has moved, so that the later history of the case cannot be given.

Myositis ossificans has been observed after dislocations of the clavicle, shoulder and elbow. Strauss has observed myositis ossificans of the subclavian muscle after a supra-acromial dislocation of the clavicle; Regnier, ossification of the subscapular muscle after dislocation of the shoulder. This lesion is much more frequently observed after dislocation of both bones of the forearm backward than with any other type of dislocation. The localization of the process is quite

Fig. 3.—Section of bone found in the brachialis anticus following an injury of the elbow.

constant when occurring after dislocation backward of both bones of the forearm. There can be scarcely a doubt that, if more intensive studies were made of other dislocations, myositis ossificans would be more frequently found. The process is so situated after posterior dislocations of the elbow that it causes considerable disability, seriously interfering with flexion

and extension of the forearm. These cases are, therefore, more carefully studied, attention being directed early to the joint, with the view of determining the cause of the disability.

It is interesting to note that ossifying myositis occurring after this injury develops almost exclusively in those cases in which an early and satisfactory reduction has been made. It has been stated that it does not

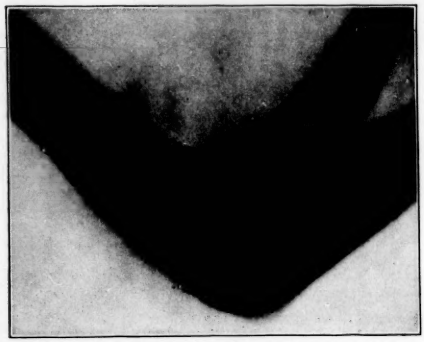

Fig. 4.—Shadow in brachialis anticus which followed an injury to the elbow.

occur in old, unreduced dislocations. This statement is, however, apparently incorrect, for Frangenheim mentions two cases of old dislocations in which, when an open reduction was attempted, bone was found in the brachialis anticus.

Periosteal stripping with displacement undoubtedly plays an important rôle in the development of this parosteal callus or ossifying myositis. The formation of bone in definite positions is noted with a certain degree of regularity after posterior dislocations of both bones of the forearm. In the majority of cases, the bone is not formed in sufficient amounts to cause disability and is, therefore, not recognized. Sudeck found in experiments performed on cadavers that, in the backward dislocations, injury of the capsule associated with periosteal stripping is rather constant. Stripping of periosteum usually occurs at four points, over the internal and external condyles, over the posterior surface of the humerus above the olecranon fossa, and above the supratrochlear fossa.

After such an injury, there develops with some regularity, on one or more of these areas, callus which varies in size and relation to the humerus, depending on the amount of periosteum stripped and the accuracy with which it is replaced when the dislocation is reduced. After reduction, the callus developing over the external and internal condyles is not usually large and is not much out of position, for the stripped periosteum is not widely displaced. Neither is the subtricipital callus as a rule large. Usually, it does not extend far from the shaft. In most cases, the anterior parosteal callus is not large, and frequently it is closely applied to the shaft of the humerus at the upper limit of the elbow joint or lower down, near the ulna. The stripped periosteum may, however, be considerably displaced anteriorly into the ruptured and infiltrated fibers of the brachialis, and when the growth process instituted by the trauma continues, a lesion causing marked disability seriously interfering with the motions of the elbow joint develops. The development of the lesion in this position gives rise to marked disability and roentgen-ray findings such as have been described in the cases cited above.

Bone often develops rapidly in muscle the seat of ossifying myositis. The shadow cast in roentgen-ray examination varies according to the age of the process. In from three to four weeks, in cases of myositis ossificans following posterior dislocations of the elbow, the shadow occupies the space in front of the proximal part of the elbow joint and extends down through the soft parts toward and near to the bone. The shadow may be indistinct and diffused. This shadow gradually becomes denser and smaller, and on the average attains a greater density after six weeks; but the density and form which are final are not attained until some weeks later. The shadow may apparently change its position, for as a rule, in the early cases, the shadow may be found in the brachialis anticus at the upper part of the joint, and as the shadow increases in density and assumes its definite form, it may take a position more distalward.

The shadow in the early stages is not homogeneous, for lighter and darker areas are found. Machol has spoken of the shadow as resembling a dotted veil. As ossification occurs, lines varying in width form which, passing transversely and obliquely, bound and separate the darker areas. As the density of the shadow increases, definite connection with the bone may be seen, the density of this connecting shadow usually corresponding with that of the soft parts. The bony trabeculae which may be seen in the later stages when the shadow has reached its definitive density correspond, as a rule, to the direction of the muscle fibers.

Fig. 5.—Appearance of bone developing in the brachialis anticus following posterior dislocation of the elbow. This shadow has gradually increased in density and decreased in size. There is some evidence of periosteal stripping in this case, for the deeper shadow which is apparently part of the more superficial one is attached to the bone.

In some of the cases, the shadow remains stationary, but usually there occurs a still further reduction in the size of the shadow with the passage of time. It seems, so to speak, as if the shadow were gradually com-

pressed. The long time required for the final changes to occur in the shadow and the slowness with which its definitive form and density are attained are in marked contrast to the rapidity with which the shadow forms. In the majority of cases, the shadow in the

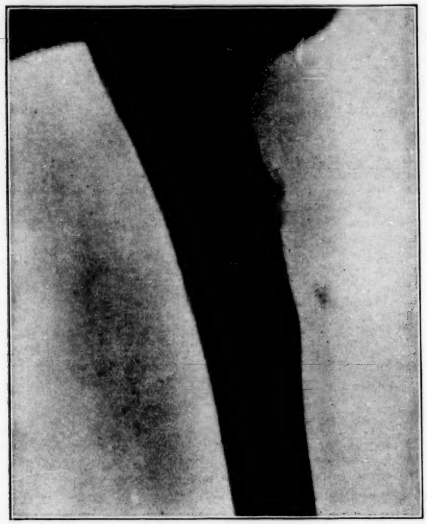

Fig. 6 (Case 7).—Myositis ossificans of crureus muscle of left thigh, with no history of trauma or infection. Periosteal change is peculiar and difficult of explanation. It may be due to pull of muscle fibers. Myositis ossificans is liable to develop in those positions in which the muscle has wide origin or insertion, periosteal injury in these cases being due to incoordinate muscular contraction. Recovery in this case occurred after extirpation of involved muscle.

muscle seems to be separated from the shaft of the bone. This does not necessarily mean that there is no connection between the mass in the muscle and the shaft of the bone; for the bony process connecting the two may be so porous that no definite and clear shadow permitting of the interpretation of such connection is present.

The symptoms associated with such an injury consist usually of considerable discoloration in the skin about the elbow and in the gradual development of an indurated and painful swelling over the anterior surface of the elbow, which gradually becomes harder as the swelling decreases in size with the conversion of the densely infiltrated muscle into bone.

In some cases of myositis ossificans, considerable difficulties are encountered in making a differential diagnosis and the etiologic factor is difficult to determine. These difficulties were encountered in the following case:

CASE 7.—J. P., aged 18, admitted to the Presbyterian Hospital, July 19, 1922, some nine months before admission had noticed a swelling on the anterior surface of the left thigh just above the junction of the middle and upper thirds. At the beginning, some spontaneous pain was noted. This lasted about two months, and gradually subsided. For the last few months, the pain had been almost negligible and had not been a prominent symptom. The mass in the thigh had grown larger, but the growth had been very slow. Three months before admission, the patient began to have difficulty in flexing the thigh. This difficulty has become more and more pronounced, until at present flexion of the thigh is markedly limited.

Repeated attempts were made to elicit a history of trauma, but the patient denied that any trauma had been sustained. There was no history of any inflammatory trouble of any kind and no history of any febrile disease.

The physical examination revealed a hard fusiform mass measuring 3½ inches (9 cm.) in length and 1 inch (2.5 cm.) in width on the anterior surface of the left thigh at the junction of the middle and upper thirds, just internal to the medial border of the rectus muscle. This mass was tender, somewhat irregular in outline, and fixed, appearing to be attached to the bone. The lower extremity of the mass seemed, however, to be movable from side to side. The muscles could be moved over it. They were somewhat atrophied. The thigh could not be flexed to more than 20 degrees; flexion of the knee was limited to about 35 degrees.

A roentgen-ray examination revealed a definite roughening on the outer side of the femur. This roughening resembled somewhat a well accentuated muscle attachment, being, however, very pronounced. There were no medullary changes and no destruction of the cortex. Some small irregular shadows, one of which was very well marked, were seen. These were apparently in the soft tissues and did not seem to be attached to the diaphysis or connected with it in any way.

A definite diagnosis was not made at this time. The increase in size of the mass, its apparent attachment to the bone and the roentgen-ray findings, led me to suspect a sarcoma of bone. I must admit, however, that the roentgen-ray findings would hardly justify such a diagnosis.

An operation was performed, July 21. An incision was made over the mass parallel to the long axis of the thigh. As the medial border of the rectus was retracted outward, it was found that the mass was in the substance of the crureus muscle. This mass contained several islands of bone scattered among degenerated muscle fibers which were infiltrated with old degenerating blood and calcium salts. A probable diagnosis of myositis ossificans involving the crureus muscle was made. The etiology in this case could not be determined; nor the

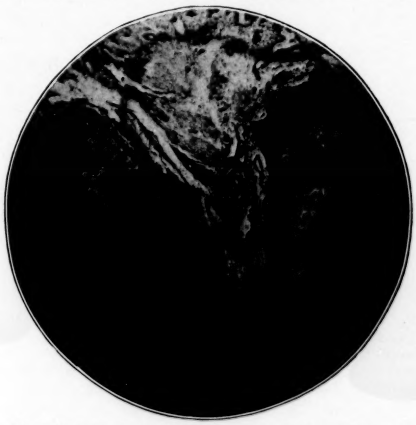

Fig. 7 (Case 7).—Section of tissue removed. Cartilage and bone were distributed throughout the upper part of the crureus muscle, which was infiltrated with blood and undergoing degeneration.

relation of the process to the periosteal change on the outer side of the femur. The process in the crureus muscle seemed to have no definite anatomic relation to the change in the femur.

The histologic changes found in the tissues removed were those of myositis ossificans.

This case is interesting in that no history of trauma could be elicited. Some slight trauma could be easily overlooked and forgotten. No history of any infectious process or febrile disease could be elicited.

Some cases of myositis ossificans are undoubtedly secondary to some infectious process in the muscle, a degenerating myositis being followed by calcification and bone formation. In the cases reported by Salman and Peiser, fixation of the hip in flexion, adduction and outward rotation occurred without injury or known cause. Salman found extensive degeneration of the iliopsoas muscle with bone formation in his patient, aged 13, while Peiser found an extensive tumor-like formation of bone in his case. Some infectious

Fig. 8 (Case 8).—Myositis ossificans following a blow on the thigh during a football game. Injury occurred Nov. 25, 1922; roentgenogram taken Jan. 25, 1923. No change in periosteum is noted. The shadow is not continuous with the periosteum at each extremity and there is no involvement of periosteum beyond the shadow. (Roentgenogram furnished by Donald Macrae, Jr., Council Bluffs, Iowa.)

processes seem to have played a rôle in the cases described by DeWitt, Itzerott and Roskowski. In Itzerott's case, bone developed in the glossy edematous brachialis anticus, some fever and pain accompanying the process. In Roskowski's case, extensive ossification occurred in the flexor and extensor muscles of the forearm after a severe phlegmon.

Although no history of trauma could be elicited in the case cited above, I do not believe that one is justified in placing it in the nontraumatic group of myositis ossificans, for no history suggesting an infectious process leading to a degenerating myositis could be elicited. It is possible that the periosteal change in this case was due to muscular contraction. Muscles with broad origins are not infrequently the seat of myositis ossificans, the periosteal stripping in these cases being due to incoordinated muscular contractions. The history of an injury cannot be elicited in such cases.

CASE 8.—A youth, aged 19, was injured, Nov. 25, 1922, while playing football. He received a heavy blow on the outer side of the left thigh, which, according to his statement, was delivered by another player's fist. He finished the game, although the thigh was tender and caused him considerable pain. He played another game of football five days later. The pain became so much worse after this game that he was sent to the school infirmary by the physician. He remained in bed four days. He then got up and went about, feeling no pain or discomfort. After a few days, he experienced pain in the thigh again when walking, and limped considerably. During the Christmas vacation, he walked but little. The physician whom he consulted advised that arnica be rubbed on the thigh. When school opened after the holidays, he tried to play basketball, but was unable to do so because of the pain caused by running. January 20, 1923, a roentgenogram (Fig. 8) revealed a shadow suggestive of myositis ossificans. This diagnosis was later verified by operation. I am indebted to Dr. Donald Macrae, Jr., of Council Bluffs, Iowa, for the history of this case and the roentgenogram.

MYOSITIS OSSIFICANS OF THE TENSOR FASCIAE FEMORIS

CASE 9.—J. R., aged 33, a Russian, admitted to the Presbyterian Hospital, Jan. 4, 1914, complained of a swelling on the anterior and lateral aspect of the left thigh about 2 inches (5 cm.) below the anterior superior spine of the ilium, which, according to the patient's statement, had been there about five weeks. He stated that the mass was of about the same size when first noticed and had not changed any recently.

Nothing could be elicited which had any bearing on the development of this mass. The patient had pneumonia two years before admission to the hospital, but recovered without any complications.

Physical examination revealed a hard mass on the anterolateral aspect of the upper part of the left thigh. This mass measured about 2 inches (5 cm.) in diameter and was situated about 2 inches below the anterior superior spine of the ilium. It had the consistency of cartilage, and was irregular in outline, freely movable and not attached to the skin.

January 5, this mass was removed through a 4-inch incision from the substance of the tensor fasciae femoris. A small mass the size of a peanut, not attached to the main mass, was later removed through the upper part of the incision. These masses on examination proved to be bone developing in degenerating and infiltrated muscles.

Myositis ossificans must be differentiated from a number of different lesions such as hematoma in muscle and muscle callus, an interstitial syphilitic process involving muscle, different forms of tumors of muscles, exostoses and separation with displacement anteriorly of the articular cartilage of the capitellum, in this type of fracture, which is rare.

It is especially important to differentiate between malignant growths of bone and myositis ossificans; for in some instances the benign process of myositis ossificans has been regarded as a malignant growth, and amputations have been performed. The periosteal sarcoma is the only bone tumor that could be confused with myositis ossificans; for the central giant cell sarcoma is so characteristic and so different from myositis ossificans in roentgen-ray appearance that no question should arise concerning the differential diagnosis of these lesions.

It may be difficult to differentiate between a periosteal sarcoma and myositis ossificans clinically, for a history of trauma may be elicited in each; both occur

in young people, and the consistency may be the same. In some cases, the differential diagnosis cannot be made by the history and physical findings. The roentgen-ray findings are usually however, so typical that a differential diagnosis can be made. In periosteal sarcoma, the cortex of bone is usually eroded or irregular, and the stalactite processes that are formed in the osteogenic periosteal sarcomas are laid down more or less at right angles to the shaft. The fusiform extension of both ends of the shadow onto the shaft is also indicative of a sarcoma. The shadow in myositis ossificans has a peculiar appearance, being laid down in lines which may be parallel to the shaft and crossed by other shadows at more or less of a right angle. The characteristics of this shadow are beautifully shown in a specimen prepared and studied by Phemister. This specimen illustrates the character of the shadow of myositis ossificans. The process has apparently extended along the septums between the different muscle bundles.

The differential diagnosis can usually be made on the history and the roentgen-ray findings, but if there is any doubt a histologic examination of the tissue should be made. Amputation should not be considered in any case in which there is any doubt as to the diagnosis, until a histologic examination has been made.

Fig. 9 (Case studied by Dr. D. B. Phemister).—Characteristics of the shadow in myositis ossificans. The shadow at either extremity is separated from rather than continuous with the periosteum, and is parallel with the shaft of the bone. In osteogenic sarcoma, the stalactite processes are usually at right angles to the shaft of the bone. The shadow has the peculiar dotted veil appearance referred to in the text, which is characteristic of myositis ossificans and should enable one to differentiate between this process and osteogenic periosteal sarcoma.

The rate and subsidence of growth are of importance in differential diagnosis. Myositis ossificans attains its maximum size early and remains stationary for some time, or diminishes in size; while the osteogenic sarcomas which offer the greatest difficulties in differential diagnosis have a progressive, rapid growth, without any tendency to remain stationary.

The tendency of myositis ossificans is to recede after attaining its maximum size. Therefore, manipulative movements to increase the range of motion when myositis ossificans is present, for example after posterior dislocations of the elbow, should not be made until the process has subsided; for the injury to the tissues will merely increase the extent of the process. As the bone tends to diminish in size or disappear, there may be no necessity of removing it. If it causes disability, it should not be removed until its definitive form and density have been approximately reached.

In the etiology of myositis ossificans, different factors play a rôle. No one theory will explain all cases. Myositis ossificans developing in the abdominall wall in clean incised wounds, where there is no possibility of any injury to periosteum or bone, is due to the metaplasia of connective tissue. Fascia and muscle in contact with acid secretions become converted into bone. It is striking how many cases of myositis ossificans in the abdominal wall have followed operations on the stomach, either a gastro-enterostomy or resection.

Fig. 10.—Transverse section of specimen, the roentgenogram of which is reproduced in Figure 9, showing ossification of the trabeculae in the muscles of the thigh; the relation of this process to the shaft of the femur, and no periosteal stripping.

Myositis ossificans developing after dislocations is apparently due to periosteal stripping and displacement. The ossifying myositis occurring in fractures associated with considerable movement of the fragments, such as the pathologic fractures occurring in tabes, demonstrate better than any other lesion the rôle played by periosteal stripping and displacement in myositis ossificans.

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HEMOPERITONEUM FROM RUPTURED CORPUS LUTEUM *

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It is now a well established fact that hemorrhage occurs more frequently from the ovary than from any other abdominal organ. In 1845, Scanzoni reported a case of fatal hemorrhage from the ovary at menstruation in a girl of 18, and the condition was referred to by earlier writers as apoplexy of the ovary.

Novak [1] has described fully the types of ovarian hematomas, and has shown their relation to the graafian follicle. The forms of ovarian hematoma he divided into (1) follicular (graafian follicle and atretic follicle); (2) corpus luteum, and (3) stromal hematomas.

Authors in the past have not seen fit to distinguish carefully between follicular and corpus luteum hemorrhages. Thus Moore, the most recent, has included both kinds in his table, compiling the cases reported in the literature, while he reported a case belonging to Class 2.

Those seen at operation generally belong to Group 1, and it has been more common to see those in Group 2 in

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1. Novak, Emil: The Corpus Luteum: Its Life Cycle and Its Rôle in Menstrual Disorders, J. A. M. A. **67:** 1285 (Oct. 28) 1916; Hematoma of the Ovary, Including Corpus Luteum Cysts, Bull. Johns Hopkins Hosp. **28:** 349 (Nov.) 1917; Abdominal Hemorrhage of Ovarian Origin, J. A. M. A. **68:** 1160 (April 21) 1917.

the form of ruptured lutein cysts than ruptured corpus luteum, as the case reported below.

Sampson [2] has directed attention to another form of hemorrhage in the ovary which produces a cyst with quite a different clinical picture. These cysts are related to adenomas of endometrial type. When operated on, the content of these cysts is found to be a chocolate colored fluid, the result of old hemorrhage,

Fig. 1.—Ovary: *A*, point of hemorrhage.

Fig. 2.—Ovary sectioned: *A*, corpus luteum and point of rupture.

although occasionally there is also some recent red blood in them. Sampson speculates as to their origin, saying that "they may have been endometrial cysts at the start; or they may have resulted from . . . a hematoma in a graafian or atretic follicle; or possibly an abnormal corpus luteum developed." Clinically, the cases are of chronic nature.

It is of some interest to speculate as to the cause of these hemorrhages. Meyer and Ruge [3] divided the life history of the corpus luteum into four stages: (1) the stage of hyperemia and proliferation occurring between the eighth and twelfth day after menstruation; (2) vascularization between the fourteenth and sixteenth day; (3) florescence, between the seventeenth and twenty-eighth day; (4) regression for eight days following menstruation. Novak leads us to believe that bleeding may occur during the stage of vascularization (or hyperemia) when the vessels in the theca become large and more numerous and form a line between the granulosa and the theca. From this wreath of vessels spring new capillaries which supply the granulosa cells till they become lutein cells. After this the vessels become less conspicuous, but the thecal vessels remain until well into the period of retrogression. The discharge of the ovum occurs without loss of blood, and the cavity of the follicle immediately thereafter contains no blood. But bleeding usually occurs in the hyperemic stage of the corpus luteum, and undoubtedly from the vessels described above. There is no sharp line of demarcation between a physiologic and a pathologic hemorrhage. The hemorrhage may be excessive and thus form a cyst. It may exceed the strength of the cyst wall and rupture into the substance of the ovary, and thus form a stromal hemorrhage, or it may rupture through the free wall of the cyst and cause a dangerous or even fatal hemoperitoneum; or, as in the case reported here, the corpus luteum vessels rupture directly into the peritoneal cavity without forming any cyst.

2. Sampson, J. A.: Perforating Hemorrhagic Cysts of the Ovary, Arch. Surg. **3**: 245 (Sept.) 1921.

3. Meyer and Ruge: Ueber Corpus Luteum-Bildung und Menstruation in ihrer zeitlichen Zusammengehörigkeit, Zentralbl. f. Gynäk. **27**: 50, 1913.

Smith reported his case before a meeting of gynecologists, and in the discussion that followed it was evident that many surgeons had encountered similar cases but had not reported them. The result is that today the investigator believes it is a rare condition because of the few cases in the literature and the brief mention of it in the gynecologies, whereas follicular or corpus luteum hemorrhage should really be considered not uncommon.

It is with this in mind that I report this case.

REPORT OF CASE

History.—A married woman, aged 30, was admitted to Mount Sinai Hospital, November 14, complaining of severe pain in the abdomen. Her health had always been good. She had had three children and no miscarriages. The menses had been regular every four weeks, the flow being from three to five days, of moderate amount, and always accompanied by pain in the lower abdomen and back and by frequency of urination. The last period began, Nov. 1, 1922, lasted three days, and was normal. November 14, she was awakened at 5:30 a. m. with excruciating pain in the lower left abdomen. She ate some breakfast, and although not feeling well went to work and remained until 3 p. m. During this time she was nauseated, but did not vomit. When she returned home she went to bed. The pain increased. She had been very constipated, and had had a small bowel movement in the morning. She now took a cathartic. The pain became generalized over the whole abdomen. On admission to the hospital, she complained that she could not get her breath if she lay flat, and that she had severe pain in her back.

Examination.—The patient lay in a half sitting position, holding her abdomen, complaining of severe pain there and in her back. She was dyspneic and had a marked pallor. The abdomen was rigid and tender everywhere. No masses could be felt. There was definite shifting dulness in the flanks. The vagina was too tender to allow an examination. The temperature was 100; pulse, 100; respiration, 28. The urine was normal. The leukocytes numbered 10,000. The

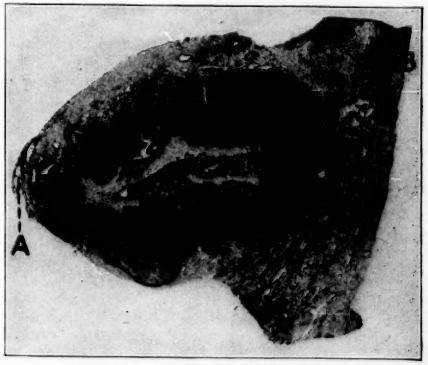

Fig. 3.—Corpus luteum, magnified about 5 diameters; the central blood clot, by shrinking, causes infolding of lutein cells; *A*, hemorrhage; *B*, corpus albicans.

rest of the examination was negative. There was no blue discoloration about the umbilicus as described by Cullen in cases of hemoperitoneum.

Operation.—Left salpingo-oophorectomy was performed under nitrous oxid anesthesia. The duration was forty minutes. A right rectus incision was employed. A dark mass in the abdominal cavity was seen through the peritoneum. The peritoneum was opened, followed by a flow of dark blood and clots, amounting to about 1 liter. The patient was put

in the Trendelenburg position. The uterus and adnexa were delivered. The right tube and ovary were normal. Active bleeding was found to come from a rough spot on the left ovary. The left tube and ovary were removed. Closure was performed in the usual manner.

Pathologic Examination.—The fallopian tube was normal throughout. The ovary measured 4 by 3 by 3 cm. (Fig. 1). It was of normal consistency and its surface was free from adhesions and inflammation. At one spot was a small, everted, rough surface 6 mm. in diameter, from which the blood was seen spurting at operation. On section through this spot (Fig. 2) a corpus luteum was bisected. The corpus luteum was regular in outline except at the point of rupture. The rest of the ovary was normal.

Microscopic examination showed a fresh corpus luteum with much extravasation of blood into the space outlined by the decidua-like lutein cells. These were arranged in an

Fig. 4.—Low power: at right, clot undergoing organization; at left, lutein cells with congested capillaries and hemorrhage.

irregular, wavelike band, forming an ellipse, and between them and the hemorrhage, organization of the clot was going on. Among the lutein cells and out into the surrounding stromal cells of the ovary was considerable hemorrhage. The blood could be traced from the center of the corpus luteum to the surface of the ovary. The vessels between the lutein cells and the theca interna were markedly congested. Congested capillaries were numerous. The rest of the ovary was normal, showing no cysts and no inflammation. It will be readily seen from Figure 3 that this corpus luteum is in the second stage as shown by W. Blair Bell.[4] Figure 4, a high power view of a part of the same section, shows well the lutein cells, the vascularity, hemorrhage and beginning organization of the central clot.

Course.—Except for stimulation required on the third day after operation, the patient's convalescence was uneventful. November 17, the hemoglobin was 40 per cent.; erythrocytes, 2,930,000; leukocytes, 11,200. December 2, the hemoglobin was 60 per cent.; erythrocytes, 3,370,000. The wound healed by first intention, and the patient was discharged from the hospital, December 3. When seen, March 2, 1923, she was well; she had had two menstrual periods since the operation.

COMMENT

As in all similar cases reported, the diagnosis was not made preoperatively. On account of the extreme pallor and abdominal signs, a ruptured ectopic pregnancy was first considered. This was rejected because of the menstrual history, although it is well known that these sometimes occur without the patient's missing a period. Therefore, considering the abdominal signs with free fluid, the low fever and low white count and pallor, the diagnosis of fulminating peritonitis with the patient in shock was made.

It is interesting to note that this hemorrhage occurred thirteen days after the last menstruation, or in the stage of hyperemia of the corpus luteum. There is nothing characteristic about this lesion that will allow of differentiation from appendicitis and ruptured ectopic pregnancies. And yet, given such a case of severe shock, pallor and extreme abdominal rigidity and severe pain in the back without having missed a menstruation, a ruptured follicular cyst or corpus luteum must be thought of. Fortunately, the indication is the same: operation without delay.

At the operation it was thought that the hemorrhage was due to a ruptured ovarian pregnancy, and therefore the whole ovary was removed. But had it been recognized, at that time, that the hemorrhage was from a ruptured corpus luteum, it might have been unwise to resect the ovary and to leave part of this apparently healthy ovary, because of the experience of Gordon Taylor, who did a right salpingo-oophorectomy for hemorrhage from a ruptured lutein cyst, and eighteen months later had to remove the left ovary for the same cause. Thus there may be something distinctly pathologic in the structure of such ovaries.

1020 Huron Road.

4. Bell, W. B.: Principles of Gynecology, Ed. 3, 1920, p. 57.

DEPRESSION OF CARDIAC CONDUCTIVITY DURING QUINIDIN THERAPY

SUDDEN ATTACK OF UNCONSCIOUSNESS AND AURICULOVENTRICULAR DISSOCIATION *

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Serious accidents during the course of treatment with quinidin, such as sudden collapse, unconsciousness and even death, although not common, have occurred often enough to be considered important, especially since the use of quinidin is becoming more widespread. Little is known with respect to the cause of these accidents; most of them have been attributed to such conditions as embolism of the brain, sudden respiratory paralysis, or some profound disturbance in cardiac mechanism.

The disturbances in cardiac mechanism under suspicion are paroxysmal ventricular tachycardia, ventricular fibrillation, failure of stimulus production, and heart block. Of these, paroxysmal ventricular tachycardia has been recorded electrocardiographically by a number of observers, and ventricular fibrillation at least once.[1] The literature thus far affords some suggestive evidence, but, so far as I am aware, no clear proof that either failure in stimulus production or complete heart block has resulted from therapeutic doses of quinidin. The case here reported shows clearly the occurrence of heart block during the administration of quinidin, and also a sudden attack of unconsciousness

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1. Kerr and Bender: Paroxysmal Ventricular Fibrillation with Cardiac Recovery in a Case of Auricular Fibrillation and Complete Heart Block While Under Quinidine Sulphate Therapy, Heart **9**: 269 (Dec. 27) 1922.

which, judging from the clinical phenomena, appeared to be due to difficulty in the assumption of automaticity below the level of the block.

REPORT OF CASE

C. B., a white man, aged 36, was admitted to the Medical Division of the University Hospital, Jan. 10, 1922, in a state of extreme cardiac failure. A history was obtained of three attacks of chorea between the ages of 13 and 15, and ever since that time breathlessness and palpitation on exertion. However, he had lived a normal life, taken part in sports except the most strenuous ones, and worked in an electrical shop, where he sometimes had to life heavy weights. He had continued his work until eighteen days before admission, when he was forced to stop on account of breathlessness, which had begun to trouble him seriously about two months before. In spite of medical treatment, he had continued to grow worse, and for a few days before admission had been almost continuously gasping for breath.

On examination, he was observed to be very restless, extremely orthopneic, and cyanotic. There were present marked cardiac enlargement, definite signs of mitral stenosis and regurgitation, auricular fibrillation with a ventricular rate of approximately 160, and a large pulse deficit. There were numerous moist râles in the lungs, enlargement of the liver, and edema of the legs up to the knees.

The blood count showed a slight leukocytosis of 13,000, but was otherwise normal. The Wassermann reaction was negative. The urine contained a cloud of albumin and a few casts, and the specific gravity was 1.025.

As emergency measures shortly after admission, 180 c.c. of blood was removed by venesection; 0.25 mg. of strophanthin was injected intravenously, and 0.065 gm. of digitan and 0.011 gm. of morphin sulphate hypodermically. Within a few hours he felt comparatively comfortable, although he was still somewhat orthopneic. The medicinal treatment during the next two weeks consisted of digitan, 0.1 gm., three times a day, for ten days, and twice a day for four days. By this time (January 24) the evidences of passive congestion had cleared up, the ventricular rate ranged between 70 and 80, and the pulse deficit was abolished. The patient felt quite comfortable, and was able to walk about the ward without becoming breathless.

It was then decided to attempt the restoration of normal rhythm by quinidin. After two preliminary doses of 0.2 gm. of quinidin sulphate, he received 0.4 gm. twice a day for two days and then three times a day for two days. The treatment was unsuccessful and was discontinued for three days. February 3, quinidin was again given but in the larger dosage of 0.6 gm. three times a day. On the morning of February 5, it was observed that the ventricular rate had slowed to 60, but the action was still quite irregular. In the afternoon, there was a seizure which was observed by the intern in the ward, who thus described it:

"At 5:30 p. m., just before supper, the patient had a sudden attack of unconsciousness lasting about ten minutes. The eyes were fixed and the head thrown from side to side. He then gradually became conscious of his surroundings, at first talking at random, but in about one half to three quarters of an hour, he was himself again. During the attack, the pulse was weak and could not be counted, and the heart was beating very slowly and irregularly. Two hours after the attack, the heart action was regular and slow. Transitory numbness of arms and headache were complained of. There were no paralyses."

The next morning, the ventricular rhythm was still perfectly regular and the patient felt comfortable. It was thought that normal rhythm had been restored until an electrocardiogram was taken, which showed regular ventricular rhythm with a rate of 60, but the auricles were found to be fibrillating. The following day (February 7), the mechanism was the same but the ventricular rate had slowed to 48. February 8, the dominant ventricular rate was 34, but was interrupted by occasional ventricular extrasystoles. The hypodermic injection of 2 mg. of atropin sulphate exerted no appreciable effect on the ventricular action. The slow rate was not accompanied by any subjective symptoms; in fact, the patient stated that he was feeling better every day. February 9, total arrhythmia returned, but the ventricular rate still remained under 35. It gradually increased, and by February 12 ranged between 60 and 70. On that date the patient left the hospital to return to the care of his family physician.

COMMENT

In this case, the interpretation of the electrocardiograms (shown in the accompanying tracing) offer no especial difficulty. The occurrence of regular ventricular action during auricular fibrillation has been regarded as evidencing complete dissociation between auricles and ventricles. The soundness of this view has recently been demonstrated by Lewis,[2] who treated a patient exhibiting such a cardiac mechanism with quinidin. The auricular action was restored to normal, whereupon dissociation between auricles and ventricles was apparent.

Our case presents two points of clinical interest. These are (1) the rôle of quinidin in the production of complete dissociation, and (2) the cause of the sudden attack of unconsciousness.

It has been shown by a number of experimenters that quinidin exerts a depressant action on auriculoventricular conduction. Lewis, Drury, Wedd and Iliescu [3] have demonstrated that it also causes paresis of vagus action; hence its effect in depressing conduction is due to direct effect on the muscle itself. Schott,[4] by giving very large doses to guinea-pigs, was able to bring about extraordinarily high grade incomplete block but not complete dissociation. His failure to produce the latter he attributed to depression of stimulus production by the drug below the level of the block, preventing the assumption of idioventricular rhythm. On the other hand, Boden and Neukirch,[5] under highly artificial experimental conditions, were able to produce ventricular autonomy.

Many clinical workers have noted that immediately after the restoration of normal rhythm by quinidin, auriculoventricular conduction time is slightly prolonged, but within a day or two returns to normal. A clear-cut instance of this delay in conduction was also noted in a case with preexisting delay in conduction reported from this clinic.[6] The patient had auricular fibrillation with a ventricular rate ranging between 60 and 80, while no drugs were being taken. Immediately after the restoration of normal rhythm by quinidin, the P-R interval was 0.32 second, but within a few days dropped to 0.23 second. Numerous tracings made afterward, over a period of many months, exhibited P-R intervals never exceeding 0.26 second.

Two cases have been reported by Hewlett and Sweeney,[7] in which, under combined treatment with digitalis and quinidin, complete dissociation developed. In one of these, attacks of the nature of Stokes-Adams' syndrome are stated to have occurred. These observers are of the opinion that quinidin played a part in the production of the block. De Massary [8] has reported a

2. Lewis, Thomas: Actions of Atropine and Quinidine in Fibrillation of the Auricles, Am. J. M. Sc. **164**: 1 (July) 1922.

3. Lewis, Drury, Wedd and Iliescu: Observations on the Action of Certain Drugs on Fibrillation of the Auricles, Heart **9**: 207 (April 30) 1922.

4. Schott, E.: Zur Frage der Chinidin Therapie., Deutsch. Arch. f. klin. Med. **134**: 208 (Nov. 23) 1920.

5. Boden, E., and Neukirch, P.: Klinische und experimentelle Beobachtungen über die Herzwirkung des Chinidins, Deutsch. Arch. f. klin. Med. **136**: 181 (June 7) 1921.

6. Wolferth, C. C.: Observations on the Treatment of Auricular Fibrillation by Quinidin Sulphate (Figure 4, Case 6), Am. J. M. Sc. **162**: 812 (Dec.) 1921.

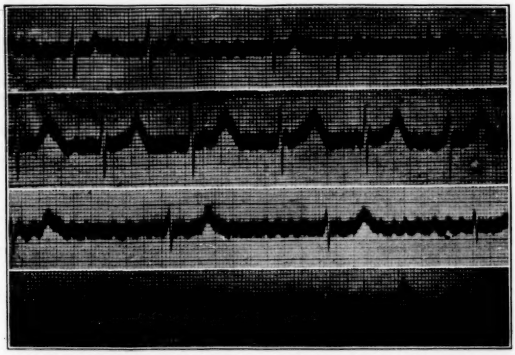
7. Hewlett, A. W., and Sweeney, J. P.: Quinidin Treatment of Auricular Fibrillation, J. A. M. A. **77**: 1793 (Dec. 3) 1921.

8. De Massary: Discussion on paper of Lian, C., and Robin, V.: Traitement de l'rythmie complète par le sulfate de quinidin, Bull. et mém. Soc. méd. d. hôp. de Paris **40**: 23 (Jan. 13) 1922.

case in which, under the influence of quinidin, the rhythm changed from a rapid, irregular action to a regular bradycardia. During the latter there were a number of "epileptiform crises," but when it disappeared and rapid arrhythmia recurred, there were no more seizures. In the discussion of this case, it was suggested that the regular bradycardia was the result of complete dissociation, and the so-called epileptiform seizures were, in reality, Stokes-Adams attacks.

In the oft-quoted case of Haass [9] in which sudden cardiac arrest and syncope occurred, followed by the resumption of cardiac activity with presumably normal mechanism, the suggestion has been made by other writers that heart block may have occurred. The case was reported with insufficient data to permit of a definite conclusion. The clinical manifestations could be satisfactorily accounted for simply by delay in the resumption of function by the pacemaker, following the interruption of fibrillation.

In our case, it is necessary to consider, as possible factors in the production of block, (1) preexisting defect in conduction due to disease in the auriculoventricular bundle, and (2) the effect of the digitalis which had been taken prior to quinidin. The former is rendered unlikely by the fact that, on admission, the ventricular rate during auricular fibrillation was 160, which is pretty good evidence that auriculoventricular conduction must have been little, if at all, impaired. with regard to the effect of digitalis, it is to be noted that the complete dissociation did not occur until twelve days after digitalis had been discontinued. Moreover, during the height of digitalis action, no unusual degree of auriculoventricular block was exhibited, the ventricular rate varying between 60 and 80. On the other hand, the block occurred at a time when approximately the maximum concentration of quinidin in the body must have been reached, 5.4 gm. having been taken within a period of fifty-six hours. The conclusion appears justified that the dissociation was due principally to quinidin, and that while the effect of digitalis as a contributing factor cannot be excluded entirely, its rôle must have been a minor one. It would appear that auriculoventricular conduction in this case was peculiarly vulnerable to quinidin, being affected far out of proportion to what usually occurs.



All tracings are Lead II: top tracing, made Jan. 25, 1922, after treatment with digitalis, but before quinidin; second tracing, February 6, persistence of auricular fibrillation, but complete dissociation with regular ventricular rhythm, rate 60; third tracing, February 8, mechanism same as preceding, but ventricular rate 34; fourth tracing, February 9, first stage of recovery from dissociation.

Another unusual effect of quinidin on the heart muscle was manifested by the marked prolongation of the ventricular complexes of the electrocardiographic curves. At the height of digitalis effect when the ventricular rate was 74, the duration of the ventricular complex in Lead II was 0.36 second; but after the development of complete dissociation with a ventricular rate of 60, the duration of the ventricular complex lengthened out to 0.56 second. This increase is far more than could be accounted for by the comparatively slight change in rate. We have frequently observed moderate prolongation under the influence of quinidin, but never such an extreme degree.

It is of interest that atropin in dosage as high as 2 mg. subcutaneously exhibited no obvious effect on the block. This may be explained on the basis of the demonstration by Lewis and his co-workers that quinidin causes a paresis of the vagus and depresses conduction by acting directly on the muscle of the conducting tissue, a state of affairs that would tend to nullify the effect of atropin.

In regard to the cause of the sudden attack of unconsciousness, there is no adequate explanation except the peculiar action of the heart at that time. The slow, irregular ventricular action might have been due either to high grade incomplete heart block, similar to that obtained by Schott in guinea-pigs, or to difficulty in the assumption of ventricular rhythm after the development of complete dissociation. The differentiation from the clinical point of view is academic, and in either event would depend on depression of stimulus production below the level of the block. In the case of dissociation caused by digitalis, it is well known that the dissociation may develop, and not rarely does so, without causing serious symptoms. The scanty evidence available at present suggests that the assumption of ventricular rhythm under the influence of quinidin is more difficult than in the case of digitalis. If this proves to be correct, it would follow that quinidin heart block is more dangerous than digitalis block.

SUMMARY

In the case of auricular fibrillation reported, auriculoventricular dissociation developed without change in the auricular mechanism following the administration of quinidin. There was no evidence of preexisting defect in conduction. The use of digitalis had been discontinued twelve days before the development of dissociation, but may have been a minor factor in its causation, the major factor undoubtedly being quinidin. It is suggested that the patient's conduction system was peculiarly susceptible to quinidin. There was a sudden transient attack of unconsciousness about the time of the onset of dissociation, accompanied by very slow ventricular action and weak pulse. The evidence indicated that the attack was caused by difficulty in stimulus production below the level of the block.

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9. Haass: Ueber die Chinidin Therapie der unregelmässigen Herztätigkeit, Berl. klin. Wchnschr. **58**: 540 (May 23) 1921.

A CLINICAL AND ROENTGEN-RAY STUDY OF TUBERCULOUS BRONCHO-ADENOPATHY *

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AND
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With the realization that tuberculosis commonly has its inception during the earlier years of life, physicians, so long concerned chiefly with the diagnosis and treatment of tuberculosis in adults, are now focusing their attention to a greater degree on the manifestations of this disease in childhood, and particularly on that form known as tuberculous tracheobronchial adenopathy. During the last few years, studies looking toward an earlier diagnosis of childhood tuberculosis have resulted in the accumulation of such a mass of data that we have thought it wise to attempt an evaluation of the various signs, symptoms and tests which have a bearing on the diagnosis of this condition.

The data which relate to the diagnosis of childhood tuberculosis comprise: (1) a history of exposure to infection; (2) the Pirquet skin test; (3) symptoms; (4) physical signs, and (5) roentgen-ray findings.

EXPOSURE TO INFECTION

Although it may appear heretical to say so, we feel that the importance of a history of exposure has been overestimated; for a definite history of exposure does not give us as much information as does a positive Pirquet test, which indicates infection with the tubercle bacillus but not necessarily tuberculosis in a clinical sense. In the presence of symptoms, however, and with the absence of other infections which might account for such symptoms, the knowledge of exposure and of possible infection with the tubercle bacillus constitutes one link in the diagnostic chain; but it must

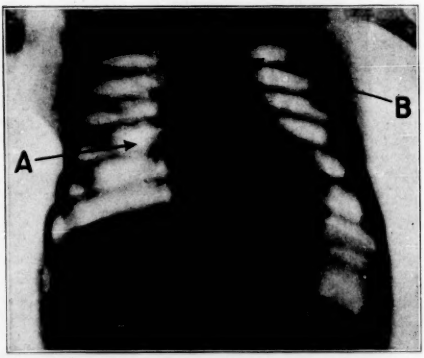

Fig. 1.—Lungs of child, nine days after birth: *A*, small hilum shadow; *B*, thymus.

be remembered that a negative history of exposure does not by any means exclude the possibility of tuberculous infection. It seems that a history of exposure might be of more value if recent; unfortunately, however, it is but seldom that one can ascertain at what period of life exposure resulted in infection. In this respect, the report of Hess (1912) is unique. A group of eight orphan asylum children between 2 and 3 years of age, giving a negative Pirquet test when admitted to the institution, were attended for six weeks by a woman

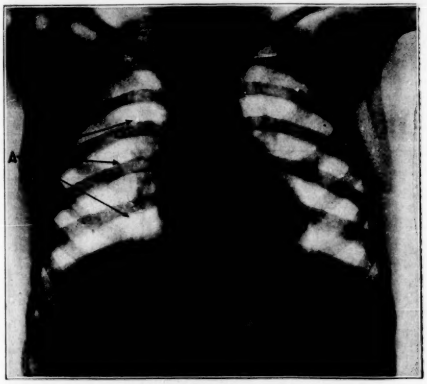

Fig. 2.—Normal chest: *A*, hilum.

who was found to have tuberculosis. In the course of a few months' time, all of these children gave a positive reaction to the test; other sources of infection having been excluded, it was possible in this instance to fix both the source and, approximately, the date of infection.

PIRQUET REACTION

A positive reaction to the skin test indicates infection with the tubercle bacillus, but, as just stated, does not necessarily point to this infection as the cause of symptoms. With increasing age, the proportion of children giving a positive reaction likewise increases; according to Veeder and Johnston, whose figures are somewhat lower than those of most observers, 1.5 per cent. give a positive reaction during the first year of life, 5 per cent. during the second year, and 20 per cent. between the ages of 2 and 4, with a gradual rise to 40 per cent. in the years between 12 and 14. A positive reaction assumes greater importance as a disease indicator, the more recently the infection has been acquired, and therefore, in a general way, is of more significance, the younger the child. A negative reaction implies—with the well-known limitations of the test—absence of infection; the test is, therefore, of the greatest value in excluding tuberculosis, and should be employed in every case.

SYMPTOMS

The symptoms of bronchial node tuberculosis are less characteristic than those of adult pulmonary tuberculosis; cough is less common, hemoptysis is rare, while fever and rapid pulse are associated with so many of the ailments of childhood that too much stress should not be laid on them. Of far greater importance are a loss of weight (or a failure to gain weight over a period of several months), and a ready fatigability, especially when both of these symptoms are present. Strongly suggestive, but in no sense diagnostic of tuberculous adenopathy, they should always lead to a

* Read before the staff of U. S. P. H. S. Hospital 60, Oteen, N. C., Feb. 15, 1923.

thorough study of the case for confirmatory evidence of tuberculosis.

PHYSICAL SIGNS

Much has been written of the physical signs of tracheobronchial adenopathy, and much will have to be rewritten; for until we have established a norm for the signs in a child's chest—or, rather, until we have learned to recognize what constitutes the range of normal variability, it is very hazardous to label this or that sign abnormal and indicative of disease. This applies to the attempt to elicit parasternal or interscapular dulness, as well as to ascribe a pathologic import to slight differences in the character of the breathing. The value of the hilum dimple, of Eustace-Smith's, and of d'Espine's signs is, at best, questionable.

ROENTGEN-RAY FINDINGS

The lack of more definite physical signs has led us to look to the roentgen ray for tangible evidence of adenopathy; and, while the roentgen ray often yields

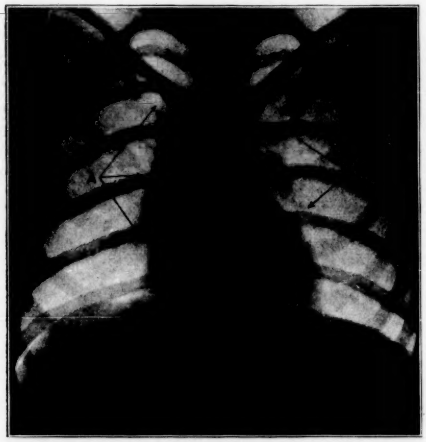

Fig. 3.—*A, A,* tuberculous adenopathy without calcification.

valuable information and should be employed whenever tuberculosis is suspected, we feel that a note of warning should be sounded against relying on this to the exclusion of other methods of examination. In the roentgen-ray consideration of children's lungs, we need, first of all, to establish a norm; but as what is normal at birth is very different from what is seen in the lungs of a healthy child at puberty, it is plain that we are dealing with variables. As a result of the study of children's lungs which we have undertaken during the past year, through the courtesy of Dr. O. L. Miller of the North Carolina Children's Hospital, Gastonia, N. C., we have formed the following impressions:

1. The chest should be symmetrical, the trachea in the midline, bifurcating in front of the body of the fourth dorsal vertebra or a little lower. The domes of the diaphragm are smooth; the right diaphragm is in front of the eighth interspace, and the left slightly lower. The mediastinal shadow shows the heart to be more nearly transverse than in the adult, and in the very young (Fig. 1) the thymus shadow is sometimes recognized about the aortic arch when no symptoms of enlarged thymus exist. The hilum, or root, shadow is located in the inner zone, and extends upward to about the fifth rib posteriorly, and downward till it crosses four ribs and intervening rib spaces (Fig. 2); its width and density vary widely in health. The lung fields

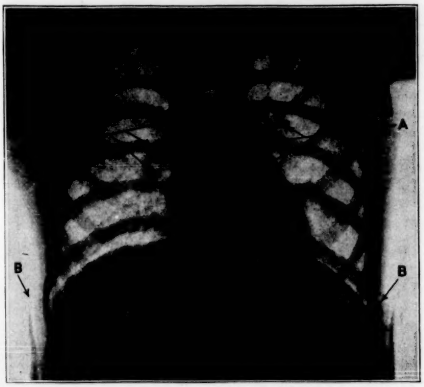

Fig. 4.—Tuberculous adenopathy: *A, A,* small, calcified nodes; *B, B,* plaster-of-Paris cast for tuberculous hip.

show no markings in the outer zone, and, in the very young, none in the middle zone.

2. At birth, lung markings, i. e., trunk shadows, are absent, and the hilum shadow is small.

3. As the child gets older, dust inhalations and infections make for more distinct shadows. The hilum shadow is produced by lymph nodes, thick-walled

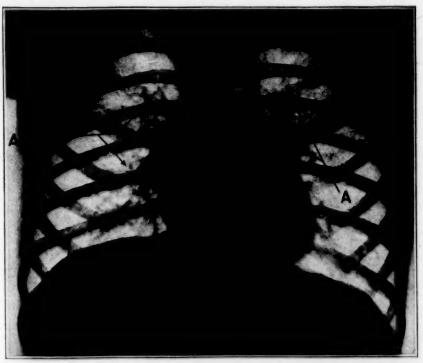

Fig. 5.—Nontuberculous adenopathy: *A, A,* calcified nodes.

bronchial tubes, blood-filled vessels and connective tissue binding them together, and it is to be noted that these shadows increase in density and area, whether a history of infections is obtainable or not.

4. Lymphadenopathy becomes apparent after the common diseases of childhood, especially those which involve the respiratory tract, such as whooping-cough

and measles, but it must be remembered that the lymphoid tissues in children are peculiarly prone to react to other infections, notably chronic appendicitis, and diseased teeth and tonsils. At this point let us urge against the tendency to read tuberculosis into films showing large hilum shadows unless these other causes can be excluded.

5. There is a group presenting, as its salient feature, marked hypertrophy of the tracheobronchial lymph nodes (Fig. 3), and another group in which the same hypertrophy is associated with calcification of the nodes (Fig. 4). All of the first group gave a positive Pirquet reaction and had known tuberculous foci elsewhere in the body. Those with calcified nodes occurred in cases in which tuberculous bone lesions were present, with the exception of one case of osteomyelitis which gave a negative Pirquet reaction (Fig. 5). If the roentgenogram had been relied on exclusively, some faulty deductions might have been made, for all of these children were in good health so far as their chests were concerned.

We have been struck with the fact that all cases in which bone lesions existed showed marked calcification of hilar lymph nodes, and we submit the question: Does calcification of these nodes necessarily indicate the presence of tuberculous processes?

THE VAGINAL PESSARY

ITS INDICATIONS AND LIMITATIONS *

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Gynecology has become so predominantly a surgical specialty that one rather hesitates to undertake even a very much qualified defense of such a nonsurgical implement as the pessary. The present-day indifference to this once popular instrument emphasizes the ephemeral nature of most of the fads which, epidemic-like, sweep over the profession at intervals. The abandonment of the pessary treatment of certain uterine displacements is a natural result of the remarkable development of gynecologic operative procedures. It is probably true, however, that the pendulum has swung too far, and that the present day gynecologic surgeon, in view of the pessary's conceded shortcomings, has shut his eyes to the fact that this instrument fills a real need in a certain selected group of cases. The young gynecologist of today frequently has no conception of what the pessary is meant to do, and he is apt to be even irritated at the suggestion that such an implement should be accorded at least a modest position in his armamentarium.

The history of the vaginal pessary is a most interesting one, establishing points of contact with many of the earlier giants of gynecologic history, for there were few of these who did not write on this subject. Many of them devised new types and modifications of pessaries. I shall not attempt a review of these various developments in a paper which I wish to be primarily "practical."

INDICATIONS

The two most important indications for the use of the vaginal pessary are prolapse and retrodisplacement of the uterus, in certain cases only and under certain conditions only. There are few gynecologists now who use pessaries for the treatment of anteversion of the uterus, although some still employ the Gehrung pessary in the treatment of cystocele and anterior vaginal prolapse. This plan of treatment has never attained a great vogue, although it would seem to be the best form of palliative treatment in cases in which operation is out of the question.

Of the retrodisplacements amenable to pessary treatment, it may be said that retroversions offer a far more hopeful field than the backward flexions. With the latter the fundus is apt to be large and heavy, so that it falls backward over the posterior arm of the pessary. It is obvious that there can be very little leverage exerted on such a top-heavy uterus by the pessary, although it is conceivable that the latter, by taking in vaginal slack, may cause a certain amount of elevation.

Prolapse and retrodisplacement of the uterus often go hand in hand. It is comparatively uncommon to see extreme degrees of either one of these malpositions without some degree of the other. With regard to prolapse, it may be said that, in general, the results of modern operative methods are so excellent and their dangers so slight that, in the absence of some definite contraindication, surgery is the treatment of choice, especially since the symptoms of the patient are usually sufficiently distressing to call for some form of relief. With regard to both retroversion and retroflexion, the profession is becoming more and more conservative. The mere demonstration of such a malposition should not be considered, per se, an indication for operation, as was the practice at one time with many gynecologists. Frequently, such displacements are associated with no symptoms whatsoever. On the other hand, there may be troublesome symptoms definitely traceable to the malposition of the uterus. This has been well brought out in the recent excellent study of Lynch.[1]

Puerperal Retrodisplacements.—These furnish one of the most frequent and most important indications for the employment of the pessary. The routine performance of postpartum examination of the pelvic organs is instructive in many ways, but in none more than in the light it throws on the incidence of postpartum displacements. This has been abundantly shown in a statistical way by Lynch and other investigators. Lynch, for example, found posterior displacements at some time during the first year following confinement in 41.1 per cent. of the 1,230 cases studied from this standpoint. Every woman should be examined within about four weeks after confinement. If, as often happens, retrodisplacement is found, the uterus should be restored to normal position and a pessary inserted.

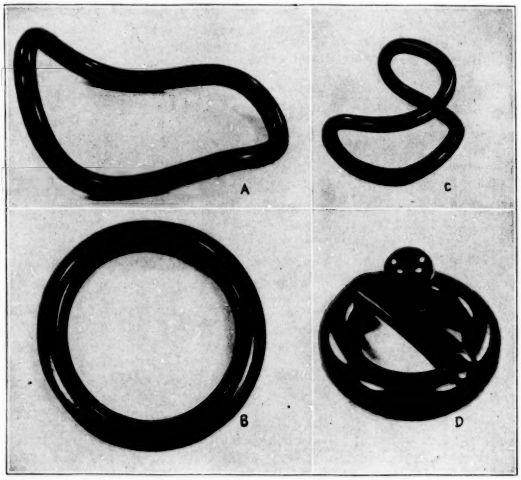
In a very large proportion of the cases, the wearing of the pessary for a short time, usually only a few weeks, is all that is necessary, and there is no tendency to a recurrence of the retrodisplacement. It is true, of course, that the mere bimanual replacement of the uterus, even without the pessary, may suffice in certain cases, but not in all. The importance of this indication is difficult to overestimate, and the failure to make careful postpartum examinations is therefore a very culpable omission. Many a woman can thus be spared later troublesome symptoms and surgical correction of the displacement. I have time and again been impressed with the success and the permanence of thus

* From the Gynecological Department of Johns Hopkins Medical School.

1. Lynch, F. W.: Retroversion of the Uterus Following Delivery, Am. J. Obst. & Gynec. **4**: 362-371 (Oct.) 1922.

early correcting these displacements, and have felt that this one indication alone should be sufficient incentive for every gynecologist and obstetrician to familiarize himself with the general subject of pessary treatment.

Retrodisplacement or Prolapse with Pregnancy.—This, to my mind, is also a most important indication for the use of the pessary. It is a well-known fact that neither retrodisplacement nor prolapse, even of the most exaggerated type, makes pregnancy impossible. I have seen a number of cases in which pregnancy occurred, even though the cervix protruded beyond the outlet. In one of these patients, the wife of a physician, arrangements had been made for the operative relief of the prolapse, when the occurrence of amenorrhea led me to defer the operation. A ring pessary was fitted and was worn for the first few months of pregancy, after which the uterus lifted itself well into the abdomen. Toward the end of pregnancy, at about the eighth month, the weight of the uterus again forced the cervix down, so that, when the patient was standing, it hung between the limbs. This resulted in enormous edema and congestion of the prolapsed cervix and vaginal walls, and the friction against the thighs caused erosion and bleeding from the cervix. It would have been useless to attempt pessary treatment at this stage, as the weight of the uterus and its contents would have made retention of the pessary impossible. The patient was instructed to spend as much time lying down as possible. When the cervix was much prolapsed and edematous, the foot of the bed was elevated, and soft, warm boric acid compresses were applied locally. In this way the patient was tided over to term. Within the last few weeks I have seen an almost identical case, with Dr. Jennie N. Browne of this city. Theoretically, there is much greater risk of sepsis in such cases than in the normal woman, but all the patients that I have observed with this association of conditions passed through their labors quite uneventfully. In these cases, labor consists of practically only the first and third stages, the second stage being virtually skipped.



Types of pessary: *A*, the Albert Smith pessary, especially valuable in the treatment of retrodisplacements; the Hodge instrument is a modification of this, having a concave posterior arm and a somewhat broader anterior arm; *B*, the ordinary ring pessary of hard rubber, employed especially in cases of prolapse; *C*, the Gehrung pessary for the treatment of cystocele; *D*, the Menge pessary; into the crossbar is screwed a conical stem or rudder, which fits into the vagina and keeps the pessary from turning on edge.

Far more frequent is the association of pregnancy and retrodisplacement. The latter commonly, though not invariably, antedates the pregnancy. If the retrodisplacement is of the type of retroversion, and if it is not extreme, simple manual reposition may be possible and may be all that is necessary. For that matter, in many of these cases, the gradual increase in the size of the pregnant uterus will lift it above the pelvic brim and thus permit of a normal continuance of the pregnancy. If, on the other hand, the displacement is more pronounced, and especially if there is a flexion, there is much danger of incarceration of the fundus in the hollow of the sacrum, with probable abortion. In cases of this type the bimanual replacement of the uterus, whenever possible, followed by the insertion of a properly fitted Hodge-Smith pessary, is often of the greatest service. Almost always the pessary can be removed at the end of three or three and a half months, by which time the uterus has lifted itself above the promontory.

Prolapse in Old Women.—It is, of course, difficult to fix any arbitrary upper age limit to the performance of operations for the correction of uterine prolapse. There are women of 70 or even more who are vigorous, well preserved and active, and in whom operation is justifiable for the relief of the distressing symptoms of complete prolapse of the uterus, especially when combined with large cystocele. The indication is particularly strong when there is extensive ulceration of the everted and thickened mucosa covering the cervix or vagina, so that the danger of malignancy becomes a real one.

On the other hand, there are patients, considerably younger, in whom the operation would seem to present more danger than is justified by the symptoms complained of by the patient. In the case of an old woman who has had complete prolapse for many years, it is often good judgment to let her finish out her life without operation. It is in such cases as this that a pessary serves a valuable palliative purpose. The type best suited for complete prolapse is unquestionably some form of ring pessary, made of hard rubber. A rather large ring is usually necessary, although the size must, of course, be adapted to the individual case. The pessary distends the redundant vaginal vault, taking in all slack, and forming a hammock in which the cervix hangs, at a much higher level than without the pessary. Soft rubber pessaries are often used for this indication in the belief that they cause less irritation than the hard rubber variety. Their employment, however, should be strongly condemned. They become foul very quickly, causing a troublesome and offensive discharge, and entailing greater risk of ulceration than the hard rubber

variety. A small pessary is of no use in a case of marked prolapse, and such a pessary is often lost by the patient.

It goes without saying that the results are much better when the perineal laceration or relaxation is of moderate extent than in those cases in which the entire perineal floor is gone. In extreme cases of the latter type, with large cystocele and rectocele, it is almost impossible for the patient to retain any form of vaginal pessary. In fitting the implement, a size should be selected which is sufficiently large to cause some difficulty and perhaps slight pain in passing it through the outlet. Once the latter is passed, there is abundant room in the greatly distended vaginal canal. The time-honored caution, that the pessary be loose enough to permit the index finger to sweep around between the pessary and the vaginal wall, is a wise one. This is especially true in the case of old women, in whom the mucosa is thin and pasty, so that the slightest undue pressure causes ulceration. For this reason it is doubly important to advise frequent examinations, so that the gynecologist can assure himself that there is no ulceration and that the pessary is not burying itself in the tissues. Cleansing douches are also of importance in these cases.

Prolapse or Retrodisplacement in Patients with Serious Systemic Disease.—From time to time, one encounters cases of prolapse or retrodisplacement which are causing troublesome symptoms, but in which operation is contraindicated by some serious general condition, such as chronic valvular disease of the heart, pulmonary tuberculosis, or advanced renal disease. The contraindication here, of course, applies primarily to the anesthetic, and only secondarily to the operation itself. It may be urged that the difficulty of the anesthetic may be obviated by resorting to local or spinal anesthesia. On the other hand, I feel that when the condition of the heart, lungs or kidneys is sufficiently grave to contraindicate general anesthesia, the operation is rarely justified, and it is better to treat the patient palliatively with a pessary.

As a Temporary Measure When Operation is Deferred for Social or Economic Reasons.—There are many cases in which, on purely physical grounds, operation is indicated clearly enough, but in which the patient simply cannot or will not submit to radical measures. For example, a woman with even a complete prolapse will often defer its correction if she is burdened with the care of a newly born infant. This is especially true when the symptoms are not very troublesome. In other cases, financial considerations may cause postponement of the operation, in still others domestic factors, and so on. When operation is thus postponed, it is usually wise, as a temporary measure, to advise the wearing of a properly fitted pessary until the necessary operative procedure can be carried out. In this way a woman can often be given a fair amount of comfort, and the extent of the later operation perhaps somewhat minimized.

As a Test to Determine the Pathologic Importance of Retrodisplacements.—The mere fact that a retrodisplacement is found in a patient who complains of pelvic symptoms of one sort or another does not justify one in linking these together as cause and effect, especially if the displacement is of the simple, uncomplicated variety so often found in women without symptoms. The pessary is often an aid in determining the rôle of the uterine displacement in the production of the symptoms. If the latter are relieved by restoring the uterus to its normal position and retaining it by means of the pessary, the assumption would seem justified that the malposition of the uterus is the cause of the symptoms, and the advisability of its operative correction would therefore arise for consideration.

CONTRAINDICATIONS

There are three chief contraindications to the employment of pessaries in the treatment of retrodisplacements: (1) the inability to replace the uterus to at least approximately its normal position before inserting the pessary; (2) the existence of a marked degree of perineal relaxation, and (3) the existence of chronic pelvic inflammatory disease.

1. In connection with the first of these, it should be remembered that the function of the pessary is not to force a displaced uterus into position, but to retain in position a uterus which has been replaced by some other means. This is a fact which many gynecologists fail to recognize, and I have repeatedly seen pessaries inserted without the slightest preliminary effort at replacing the uterus. The results under such circumstances are reasonably sure to be unsatisfactory, as will be emphasized below.

2. The importance of the factor of perineal relaxation is obvious when one studies the mode of action of the pessary. The instrument takes its foothold, so to speak, from the perineal muscles, on which its elevating action, in a large measure, depends. If this muscular floor is lacking, it is evident that there will be very little lifting power to the pessary. Furthermore, in cases of marked relaxation, especially with cystocele or rectocele, there is always the difficulty, perhaps impossibility, of retaining the pessary at all.

3. Retrodisplacement associated with fixation of the uterus is an absolute contraindication to the use of pessaries. A uterus so fixed cannot, of course, be replaced by bimanual examination, and it is not only useless, but distinctly harmful, to insert a pessary under such conditions. Furthermore, the discomfort and pain produced would almost surely prevent the wearing of the pessary. The treatment of retrodisplacements complicated by pelvic inflammatory disease should be along surgical lines.

REPLACEMENT OF THE UTERUS

One of the most important of all rules in connection with the use of pessaries is that, before the insertion of a pessary, the uterus should first be restored to an approximately normal position. In other words, as I have already emphasized, the purpose of the pessary is not to force a displaced uterus into its proper position, but merely to keep the organ in place, once it has been restored by some other means. Many physicians, and not a few gynecologists, do not realize the importance of this fact, ignorance of which, in my experience, is the reason for many of the unsatisfactory results reported from the use of pessaries. Almost always the uterus, when not adherent, can be restored by simple bimanual manipulation. The fundus is gently pushed upward by pressure with the finger in the posterior fornix, and then the finger is passed to the front of the cervix, pushing the latter backward. The fundus can thus ordinarily be swung upward and toward the front. The replacement is completed by engaging the external hand behind the fundus through the abdominal wall, while the backward pressure of the internal hand on the cervix is maintained.

Occasionally it is necessary to place the patient in the knee-chest posture. This procedure is of great value, for it allows the uterus to fall forward by its own weight into its normal position. If necessary, this forward movement may be facilitated by gentle pressure on the fundus from behind. The deepening of the vagina which a good knee-chest posture entails may make it impossible to use the finger for this purpose, in which case good use may be made of a sponge on long vaginal dressing forceps or a sponge holder. Some authors recommend traction on the cervix by tenaculum forceps, combined with upward and forward pressure on the fundus through either the vagina or the rectum. My experience has been that this maneuver is rarely necessary with nonadherent uteri, and that it might be risky in those which are adherent. In the older days the uterine repositor—a long, jointed finger-like instrument which was introduced into the uterine cavity for the purpose of elevating the organ—was quite generally employed. The dangers of this implement are obvious, and it has been very properly abandoned. The same statement applies to the employment of the uterine sound to force the uterus into anterior position.

TYPES OF PESSARY FOR ORDINARY USE

The hard rubber pessary is infinitely preferable to the soft rubber variety, which still has a rather wide vogue. The latter soon becomes foul, and often causes profuse leukorrhea. Although the number of pessaries which have been devised is legion, I believe that two or three varieties will fulfil practically all the really logical indications for pessary treatment. The two types which I find sufficient for practically all needs are the ring pessary and the Hodge-Smith pessaries. The familiar Hodge pessary, a modification of the Albert Smith type, is especially useful in the treatment of retrodisplacements, within the limitations which have been discussed above. The ring pessary is, generally speaking, the type to be preferred in the management of prolapsus of the uterus. Occasionally, when the outlet is large and when the simple ring pessary tends to stand on edge, as it were, the Menge modification is of distinct value, for it possesses a stem attachment which holds the pessary more or less at right angles to the long angle of the vagina.

THE FITTING AND INSERTION OF THE PESSARY

The cardinal point in connection with the fitting and insertion of the pessary is that the pessary be adapted to the needs of the individual case. Merely to insert a "store" pessary in a case of retrodisplacement is just as logical as to inflict on one a hat selected at random, and without regard to the size and shape of one's head. The pessary should fit snugly, but not tightly. The time-honored rule that it be possible to pass the index finger easily between the pessary and the vaginal wall is a safe one to follow. The length should be such that the lower pole is just concealed within the outlet. This can be easily measured by means of the index finger, the tip of which is passed up into the vaginal vault. The width is also easy to estimate, exact measurement ordinarily not being necessary. The length of the shorter posterior, as compared to the longer anterior arm of the pessary is dependent on the depth of the posterior fornix and the amount of elevation of the uterus which is desired. The distal tip of the instrument should be given a slight bend away from the urethra in order to avoid any discomfort which might result from pressure on the latter. The shaping of the pessary is readily accomplished by first boiling it, thus making it soft and easily flexible. It is then quickly molded into the shape desired, after which it is made to "set" by immersion for a moment or two in cold water. This method I find much more satisfactory than that employed by some gynecologists of softening the pessary by passing it through a Bunsen flame, after first thoroughly greasing it.

The insertion of the pessary is simple enough. The perineum is drawn back by one or two fingers of the left hand, acting as a speculum or retractor. The pessary, held at its narrow anterior end, is then introduced obliquely into the vagina, and pushed up as far as possible toward the vault. When the finger of the left hand is passed up into the vagina, the posterior rim will almost always be found to lie just in front of the cervix, instead of just behind it, as it should. The finger is therefore used to press it behind the cervix and to drive it home into the posterior vaginal fornix, where it belongs. In other words, the cervix lies within the lumen of the pessary. The finger is then swept about the latter to make sure that it is not making undue pressure. Care should be taken also that the lower end of the pessary does not protrude beyond the introitus. It is often a good plan to confirm the fit of the pessary by having the patient stand while the finger is kept within the vagina.

THE MECHANISM OF THE PESSARY

It is safe to say that comparatively few practitioners are familiar with the mode of action of the vaginal pessary. Many have only a vague idea that in some mysterious way it pushes a displaced uterus upward. As a matter of fact, it is just this which the pessary is not meant to do, as has already been emphasized. Its function is to keep the fundus in forward position, once it has been mechanically replaced. How is this effect accomplished? Not by direct pressure on the fundus, but rather by pulling back the cervix toward the hollow of the sacrum. This action, in turn, is produced by the posterior short arm of the pessary, which fits snugly into the posterior fornix, and tends to deepen it, much as it would be deepened by one's pushing the index finger into it as deeply as possible. By this pushing of the fornix wall upward and backward, the cervix is indirectly drawn in the same direction, and the fundus is thrown correspondingly toward the front. Combined with this action there is, of course, a certain amount of distention of the vagina, so that "slack" is taken in and a certain amount of elevation is thus secured.

In the case of the ring pessary, the latter factor is much more important than the leverage action described above. It is for this reason that, in the treatment of marked prolapse, the effort is made to take in as much slack as possible by using comparatively large ring pessaries, which thus produce a hammock-like support of the uterus. Such a pessary derives much of its support from the pubic rami, which also aid very materially in retaining it within the vagina.

PRECAUTIONS AND DANGERS DURING WEARING OF PESSARY

During the wearing of the pessary, the woman is instructed to use douches once or twice daily, depending on the amount of discharge. For this purpose, boric acid or borax is perhaps as satisfactory as any

other substance, although weak mercuric chlorid solution, permanganate, compound solution of cresol or other drugs may also be used. An examination should be made within a few days of the insertion of the pessary, to make sure that the uterus is being satisfactorily retained. After this the pessary may be allowed to remain for periods of about six weeks. At these intervals the pessary is removed, cleansed and reinserted. I am also in the habit of advising these pessary patients to assume the knee-chest position once or twice daily, if only for a few minutes at a time. This posture allows the uterus to swing forward into good anterior position, thus permitting the pessary to secure a fresh grip, as it were. This simple measure accomplishes practically as much as would a visit to the gynecologist, restoring the uterus as satisfactorily in most cases as would bimanual manipulation.

In the event of there being evidence of vaginal irritation or ulceration, which is usually manifested by a blood-tinged discharge, the pessary should be kept out for periods of from a few days to perhaps two weeks or so. Vaginal ulceration is almost never seen with a properly fitting Hodge-Smith pessary in cases of retrodisplacement, but it is not rare in old women in whom a rather large ring pessary has been employed for the retention of a marked prolapse of the uterus. With proper supervision of this sort I have never seen any disagreeable after-results from the use of pessaries.

It is well known that numerous accidents have been reported following the improper use of pessaries. I have myself had occasion several times to cut out from the vaginal wall pessaries, introduced by others, which have literally eaten out a groove for themselves, and have thus become almost completely buried. Pessaries have thus been allowed to remain for incredible periods of time without being removed, in one instance, as long as forty years.[2] Indeed, Piwniczka[3] has described an instrument which he calls a pessariotome, resembling a bone forceps, and which is designed to remove incarcerated pessaries. Instances are reported also in which the pessary has ulcerated through into the abdomen, and has later been recovered by laparotomy.

All these cases, however, are merely illustrations of gross neglect on the part of either patient or physician, and are not to be construed as evidence against the value and safety of pessaries when properly fitted and properly supervised. The cases in which pessaries should be employed are usually those in which operation would be attended with considerable danger. This gives great force to the statement of Bantock,[4] who, writing in 1905, said, "I am not aware that there is on record a single case in which a woman has lost her life through the use, or even the abuse, of a vaginal pessary."

26 East Preston Street.

2. "Veritas": Pessary Retained for Forty Years, Boston M. & S. J. **140**: 175, 1899.
3. Piwniczka, H.: Ein Instrument zur Entfernung inkarzerierter Pessarien, Centralbl. f. Gynäk. **27**: 1302-1304, 1903.
4. Bantock, G. G.: In Defense of the Pessary, J. Obst. & Gynec. Brit. Emp. **7**: 17-29, 1905.

Location of Detention Hospitals.—A board of health cannot establish and maintain a detention hospital for the treatment of communicable diseases in a thickly settled residential district. This is the decision in a case decided by the supreme court of Michigan. Suit was brought to restrain the maintenance of a detention hospital in a residential district by the board of health of the city of Lansing.—*Pub. Health Rep.* **34**:1791 (Aug. 8) 1919.

THE MECHANISM OF NATURAL AND ACQUIRED STREPTOCOCCUS IMMUNITY

PRELIMINARY NOTE *

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In two recent communications,[1] one of us (F. P. G.) gave evidence for the belief that infections with a given strain of hemolytic streptococcus in different areas of the body may be more efficiently prevented by previous immunization of that particular area rather than other parts of the body. Evidence in favor of this local form of immunity continues to accumulate and will later be presented in detail. Incidental to this line of investigation, a very convincing demonstration of the constant association of "tissue macrophages" or clasmatocytes (Ranvier) with protection of a given area against the streptococcus whether natural or acquired has been obtained.

Metchnikoff originally described his "macrophages," or large mononuclear phagocytes of the blood and tissues, in connection with experimental streptococcus erysipelas in the rabbit, but the ultimate conclusion to be drawn from his lifelong and marvelously documented cellular theory of immunity is that the preponderating rôle in disposing of acute bacterial infectious agents is taken by the polymorphonuclear leukocytes. The mononuclear macrophages have seemed occupied largely in the disposal of animal cells, dead polymorphonuclears and protozoa, and, in addition, of the bacteria of certain chronic infections, such as tuberculosis. As we have recently pointed out, however, observations since the original work of Metchnikoff continue to associate macrophages with streptococcus infections and local tissue resistance to the streptococcus. (MacCallum, Cecil, Hopkins and Parker, Levaditi.)

The exact nature of the cells involved in a purposeful response to streptococcus invasion has been confused by their designation as "endothelial," particularly in infections which have involved the serous cavities. Several authors, particularly Durham, Wallgren, Noetzel, Buxton and Torrey, and Kanai, have indicated that recovery from experimental streptococcus peritonitis is due, at least in part, to "endothelial" phagocytosis. Histologists are now throwing great light on the "cell stems" of embryonic and adult tissue by means of vital stains (Sabin). The clasmatocytes of Ranvier in particular have been differentiated from fibroblasts (Evans and Scott), and from the serosal cells lining the peritoneal cavity (Cunningham) by the acid azo dyes and by neutral red. The clasmatocytes possess a vacuolar "segregation apparatus" which enables them to retain these dyes in a characteristic manner. In addition, they have been shown to be the most resistant of body cells (Lewis and McCoy), and are endowed with more marked phagocytic properties than is endothelium.

As Cunningham and we have shown, the only cells present in normal peritoneal and pleural fluids are "clasmatocytes," derived in all probability from subjacent

* This work was begun in the University of California and continued at the Hygienic Laboratory, U. S. Public Health Service, Washington, D. C., through the courtesy of the Surgeon General.

1. Gay, F. P., and Rhodes, Bernice: Experimental Erysipelas, Studies in Streptococcus Infection and Immunity, J. Infect. Dis. **31**: 101-115 (Aug.) 1922. Gay, F. P.: On Local and General Immunity, J. Immunol. **8**, No. 1 (Jan.) 1923.

connective tissue and omentum, and not serosal or endothelial cells, as usually stated. Following the injection of a fatal dose of the streptococcus in the pleura of a normal rabbit, the polymorphononuclear leukocytes rise from a negligible percentage to more than 90 in twenty-four hours, the clasmatocytes fall from an average of 85 per cent. to 15 per cent., the bacteria steadily increase, invasion of the pericardium and other pleura follows and the animal dies in from three to seven days. In an actively immunized animal, the clasmatocyte count remains high, and at twenty-four hours (the critical phase) averages 74 per cent. At this time, the bacteria have decreased markedly in number or, in the majority of instances, the cavity has become sterile. In a similar manner, other conditions of successful resistance to streptococcus pleurisy are constantly associated with a peristently high clasmatocyte count; the use of a sub-lethal dose of bacteria, and preparation of the cavity by plain broth or by streptococcus immune serum. Other conditions of lack of protection, preparation by normal rabbit serum and the use of filtrates of pleural exudates from fatally infected animals (aggressins?), are all followed by a drop in the clasmatocytes and a rise in the polymorphonuclear cells.

We have no definite information from our work as yet on the origin of these clasmatocytes which appear so rapidly and apparently effectively in the serous cavities, as to whether they are derived from adult endothelium (Mallory et al.) or from the blood. A cursory survey of our histologic material indicates that information on this point will be available. This much is known: these clasmatocytes are ubiquitous, they are rapidly mobilized and they are phagocytic and most resistant. Our observations indicate that a definite category of cells present outside the blood stream, the "clasmatocytes" or "tissue macrophages," is associated with natural and acquired resistance to an acute infectious agent, the streptococcus.

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AGE INCIDENCE OF GASTRIC CANCER

WITH SPECIAL REFERENCE TO CANCER IN THE YOUNG *

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It has been generally accepted as a fact by practitioners that cancer is confined within the limits of a minimum and maximum age, reaching the apex of frequency during the sixth decade of life. So common has this belief become that the phrase "cancer age" has gained a ready currency not only among physicians but among laymen as well. Like most other generalities, this concept of cancer is only partly true, and, so far as its practical import in diagnosis is concerned, must be regarded as a dangerous half-truth. Cabot [1] writes: "We are accustomed to say that when a patient past forty years begins to have dyspepsia out of a clear sky—that is, without any obvious cause or any previous habit—cancer is the most probable diagnosis; but when saying this we must remember that the cancer age is also the arteriosclerotic age, and, therefore, the time for nephritis and uremia. Furthermore, the cancer age is also the gallstone age and the age for angina pectoris." He cites as an illustration the case of a woman of 29 years, who, after one operation for a fibroid of the right ovary and another for a cyst of the left ovary, became rapidly emaciated, with a weight loss of 56 pounds (25 kg.) in six months and accompanying evidence of a mass in the epigastrium, gastric stasis, visible peristalsis and roentgen-ray indication of pyloric obstruction. The patient was operated on again, and a tumor was found at the pylorus. "The case is worth remembering," the writer concludes, "as a proof that gastric cancer may occur at twenty-nine." To which may be added that no age is immune, and that a diagnosis relying to any degree on the tenet of "cancer age" may lead to a fatal issue. The case here reported will serve as an illustration:

F. K., a man, aged 31, an awning maker, came under my observation in the gastro-intestinal department of the Vanderbilt Clinic, Nov. 25, 1922. He was married, and had one child living and well. The family history and previous personal history were negative. He stated that he had previously enjoyed good health and had never suffered from stomach disorders. Though he estimated his illness to be of four weeks' duration, close interrogation elicited a much longer period, dating back to early in the spring of 1922. His chief complaints were nausea, postprandial discomfort and vomiting on several occasions, the vomitus consisting of the food ingested. During this period he did not suffer any pain.

His appetite was fair for food he liked, but otherwise deficient, with a pronounced dislike for meat. His habitus was of the sthenic type; his height, 5 feet, 9 inches (175 cm.), and weight, 162 pounds (74 kg.). He gave his maximum weight as 185 pounds (84 kg.). The pulmonary and cardiovascular systems were normal. The abdomen presented tenderness in the midepigastrium, but no rigidity or mass; the liver edge was not palpable, and the spleen was not enlarged. The pupils responded to light and accommodation. The knee-jerks were equal and active. The fasting contents consisted of 30 c.c. of congo-negative fluid, with a fair amount of macroscopic blood, the appearance of which favored the conclusion that it was not traumatic. Microscopic examination revealed pus cells, many to the field. Ewald's single test meal method showed 30 c.c., poorly chymified, mucus much increased, separated into two layers, the upper layer containing the food, the lower, clear fluid. Free hydrochloric acid was 0; combined hydrochloric acid, 0; total acid, 4; pepsin and rennet, 0. The Wassermann test reported from the skin department was negative.

A roentgenographic examination of the gastro-intestinal tract revealed a filling defect of a part of the pars media and entire pars pylorica. The pylorus was gaping, as was evidenced by immediate gastric emptying. The six hour plate showed a small fragment of barium at the proximal portion of the filling defect. The colonic tract showed cecal stasis, a spastic colon and a tendency to dyschezia.

Dr. Howard Lilienthal, who operated on the patient at the Mount Sinai Hospital, reported that examination under anesthesia failed to disclose any mass or abdominal resistance. A transverse incision was made about an inch above the umbilicus, dividing the right rectus and passing more than half way through the left. Immediately a large, succulent, nodular mass was found occupying the greater part of the posterior wall of the stomach. The pyloric region, as well as the omentum, was filled with nodules. The falciform ligament contained a number of tumor masses. A specimen was removed from the gastrocolic omentum, and the wound was closed, as the case was considered absolutely inoperable and no free part of the stomach was available for even an anterior gastrostomy; besides which, the patient did not vomit, but food passed quickly through the stomach.

Dr. Lilienthal remarked that cancer of the stomach will be diagnosed early in proportion to the obstruction it causes to the passage of food. A carcinoma of the cardia as well as of the pylorus, therefore, will be much more likely to be discovered early than one of the body of the stomach. With

* From the Department of Gastro-Enterology, Vanderbilt Clinic, Columbia University College of Physicians and Surgeons.
1. Cabot: Differential Diagnosis 2: 265.

a small cancer of the stomach, the surgeon has a good opportunity to achieve a radical cure. In the case of this patient, the cardia and the pylorus were free, but the lesser curvature and almost the whole of the posterior wall of the stomach formed one stiff mass of carcinoma, thick and nonpliable. The omentum from which the specimen was removed was also infiltrated, and there were numerous secondary deposits on the liver and the gastrohepatic omentum. It is a question whether an operation would have saved this patient at any time since a diagnosis was possible.

Dr. Mandelbaum reported that microscopic examination of the nodule removed from the omentum showed a metastatic colloid carcinoma. Excluding sarcoma, this is, say Smithies and Ochsner, the least frequent type of gastric cancer.

COMMENT

The salient points which will be discussed, are: (1) the age of the patient—one year after the third decade of life; that is, not within the limits of the so-called "cancer age," which begins, approximately, at 40; (2) a history of good health till the spring of 1922; (3) the absence of pain; (4) the mass, nonpalpable, though involving the greater portion of the stomach; (5) a picture of true achylia gastrica, and (6) a positive hemolysis.

There is a very sound basis in the voluminous evidence at our disposal for the conclusion that gastric cancer is found mostly during the ages from about 40 to 60, and exhibits a most marked tendency to avoid the extremes of age. Aaron [2] cites Lebert's figures on this matter: under 30 years, 1 per cent.; from 30 to 40 years, 17.6 per cent.; from 40 to 60 years, 60.7 per cent.; from 60 to 70 years, 16.3 per cent., and above 70 years, 4.4 per cent. Osler,[3] in an analysis of 150 cases, finds six between 20 and 30 years, of whom the youngest is 22; from 30 to 40 years, seventeen; from 40 to 50 years, thirty-eight; from 50 to 60 years, forty-nine; from 60 to 70 years, thirty-six, and from 70 to 80 years, four. It is of interest to note that the maximum liability in both sets of figures lies between 40 and 60 years of age. Lynch [4] states that "cancer may occur at any age, but usually after 50. In some 800 cases I have seen, 1 per cent. occurred at 21 years, 2.5 per cent. under 30, and 7.5 per cent. between 30 and 35 years of age," thus indicating a plotted curve similar to those of the foregoing authorities. Smithies and Ochsner [5] found that out of 921 cases of gastric cancer the percentage of those under 30 was 2.17, with a minimum age of 18 years, and an average age of 27.2 years. Ewing [6] asserts that "while the disease is distinctly one of advanced age, the rather frequent occurrence between 30 and 40 and between 20 and 30 years is noteworthy." Osler and McCrae [7] make an interesting division of the first three decades into two periods, one to the twentieth year and the other from the twenty-first to the thirtieth. They hold that "cases occurring during the first period are clinical and pathological curiosities. Those of the latter period are of more interest, since, though a small fraction of the total cases, they comprise a fairly constant percentage and show fairly uniform symptoms." It will be seen that all of the authorities that have been cited are in substantial accord as to the relative infrequency of gastric cancer at both extremes of age. A mortality table furnished by Dr. Guilfoy of the New York Board of Health, summarizing deaths from all cancers for the five years from 1917 to 1921, inclusive, presents a very similar picture of age incidence. Out of 25,836 reported deaths, only 446, or 1.7 per cent., were under 25; 4,070, or 15 per cent., were between 25 and 44; 13,981, or 54 per cent., between 45 and 64, and 7,339, or 27 per cent., over 65. Furthermore, it seems evident that the conclusion we must draw from all these statistical tables is that if the term "cancer age" is to have any use in diagnosis, then it should be only of tentative import, and may be applied to include, but never to exclude.

The second point to invite our attention is the characteristic invasion of this malady: insidious, beginning with loss of appetite, reluctance toward meat, nausea, progressive weakness, and lastly and most emphatically, the fact that this apparently vague and nondescript type of symptoms most generally occurs in an individual who has not previously suffered from gastric disorders. However, anomalies in the course of cancer must always be thought of. Cabot,[8] relating the case of a patient who had an epigastric mass for five years, yet lost only 10 or 12 pounds, and these in the last two years, concludes: "We have no right to say that cancer of the stomach cannot exist for five years and produce such a tumor as is here described. This patient was operated on and a mass found of hard, fused glands, which were situated in the omentum and greater curvature infiltrated with neoplastic tissue."

The patient in my case did not complain of pain. We know that the pain symptom is what most often induces the patient to seek medical aid, yet this weighty signal is frequently lacking. Barker,[9] citing parenthetically the figure of 13 per cent. given by Osler and McCrae, asserts that pain may be absent throughout the history of a cancer, except in cancer of the cardia, in ulcus carcinomatosum, or after perigastric adhesions have developed. Anorexia with weight loss, and freedom from pain may be the only symptoms staring the physician in the face and demanding investigation.

A tumor could not be palpated in this case, despite the relaxed posture of the patient and the complete absence of tension. This was perhaps due, in a measure, to the fact that the patient was of the sthenic type, wherein the stomach is generally high in position and therefore not readily accessible to palpation. Such a situation invites an error in diagnosis, as it may permit a tumor to grow without betraying its presence until discovered by a more comprehensive clinical investigation—and then it is usually too late. It is thus evident that failure to discern by touch should not lessen the need for a more exhaustive study.

As the presence of the cancer was obscured by freedom from pain and by the failure to palpate the tumor, the absence of both a gastric residue and hydrochloric acid suggested quite plausibly a tentative diagnosis of a nonmalignant achylia gastrica. This diagnosis will not hold when due attention is given to the subdued symptomatology; and, of course, it was quickly upset by a roentgenographic study. Achylia is associated with a wide range of maladies, and with signs and symptoms conducive to diagnostic embarrassment. The case suggests that when achylia is revealed in the course of an examination, the roentgenologist, as his part of the investigation, should roentgenograph the oral cavity for periapical abscesses; the lungs for tuberculosis; the cardiovascular system for a specific aortitis, and last and of grave importance, the stomach for malignancy

2. Aaron: Disorders of the Digestive Organs, p. 479.
3. Osler: Practice of Medicine, Ed. 4, p. 487.
4. Lynch: Personal communication to the author.
5. Smithies and Ochsner: Cancer of the Stomach, 1916, p. 374.
6. Ewing: Neoplastic Diseases, 1919, p. 605.
7. Osler and McCrae: Cancer of the Stomach, 1900, p. 16.
8. Cabot: Differential Diagnosis 2: 101.
9. Barker: Monographic Medicine 3: 526.

or syphilis or both, concomitantly. Ewing observes that "carcinoma of the lesser curvature usually arises in cases with established achylia." It is perhaps pertinent to add that a knowledge of the clinical findings and status of the stomach chemistry will assist the roentgenologist to interpret his conclusions more accurately and in consonance with them.

In this case, more as a matter of professional routine, before proceeding with the operation, it was desired to determine whether syphilis was to any degree responsible for the patient's condition. It is cited by Stokes and Brown [10] that, in a study of 200 syphilitic patients, 87 per cent. were found to have rated "stomach trouble" as their chief complaint. They have, moreover, found that "the routine roentgen-ray examination of syphilitics who complain of stomach trouble does not yield a large percentage of positive results." A serologic study was made in this case which returned negative findings. This conclusion substantiates the physical examination, which showed active knee-jerks and the absence of an Argyll Robertson pupil. A conventional approach to a history of syphilis was met with a denial by the patient. Moreover, the degree of structural pathology revealed by the roentgen ray as involving both the operable and borderline zones of the stomach was of sufficient weight to establish beyond doubt a diagnosis of malignancy. In this connection I do not wish to imply that a negative hemolysis would have deferred the operation, for I unqualifiedly agree with the writers I have last cited when they say, "We do not believe that there is any excuse for subjecting a patient who may have an operable malignant lesion to the delays of treatment for syphilis before operation."

From the operative and histopathologic findings, the fate of this case is virtually sealed, though there is a faint glimmer of hope in the roentgen-ray therapy now being applied to this patient. It is now recognized that, beginning at the pylorus, where a cancer is the most fecund, and extending toward the cardia, operability is inversely proportionate to the upward invasion of the growth. Death from colloid carcinoma, according to Parham,[11] is "often delayed, but the eventual mortality is greater than in other types of carcinoma. However," the writer concludes, "many patients with colloid carcinoma respond remarkably well to treatment by roentgen ray and radium."

This case is one instance among unfortunately too many others wherein the cancer stealthily progressed to almost certain fatality without an effort being made for its arrest until too late. In cancer, time is the ravaging agent, not age. The time lost from the patient to the physician and from the physician to the hospital is an evil we must combat.

CONCLUSIONS

1. Occupation, family traits, habits, mode of living, onset of complaint, in short, that fine network of circumstance with which cancer is usually associated, has a greater significance than age.

2. When the patient is of an age not within what might be termed the frequency period—the so-called "cancer age"—I believe physicians have manifested a very human failing by their reluctance to ascribe the patient's condition to so horrible a disease as cancer, and naturally cast about for a milder malady.

3. Symptoms warranting a diagnosis of chronic gastritis, particularly in patients who claimed the enjoyment of good health prior to the onset, favor a suspicion of cancer.

4. When a diagnosis of carcinoma ventriculi is established in a case in which there is no palpable mass, it is not safe to assume from the absence of such a mass that the disease is in an early stage, for a large growth that has well metastasized may exist without producing a palpable tumor.

5. It is the prediagnostic phase of cancer that we must endeavor to detect—a phase often disregarded because of the absence of impressive signs or symptoms, as when neither the cardiac nor the pyloric orifice is involved, when there is no hesitation in food entrance and no obstruction to food exit. A suggestive symptomatology, no matter how faint the indication, calls for a searching inquiry.

6. Finally, let us remember that the easier it is to diagnose a cancer, the harder it is to operate on it.

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10. Stokes, J. H., and Brown, P. W.: Two Hundred Syphilitic Patients Whose Chief Complaint was "Stomach Trouble," Am. J. M. Sc. **164**: 867 (Dec.) 1922.
11. Parham, D.: Colloid Carcinoma, Ann. Surg. **77**: 90 (Jan.) 1923.

TREATMENT OF SEASONAL HAY-FEVER, AND SOME POSSIBLE CAUSES OF FAILURE *

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Noon and Freeman, in 1911, published from Wright's laboratory in London the first reports of the successful treatment of hay-fever by active immunization.[1] In this country, Koessler,[2] in 1910, and Clowes [3] in 1913, first attempted the preventive treatment of the American or autumnal form of hay-fever. Thirteen years have scarcely elapsed since the first hope for relief has been given to the vast army of hay-fever patients. In fact, so recent is the innovation that not all the limitations or imperfections have been brought to light. Accordingly, some members of the profession have fallen victims to skepticism, whereas the sufferers from hay-fever have fallen prey to the numerous "cures" which are heralded in the lay press and journals.

It is my purpose to record the results of an inquiry into the present status of the preventive treatment of seasonal hay-fever, and to disclose the possible causes of failure of such treatment.

It is obvious that an accurate diagnosis is the first prerequisite to successful treatment. In determining the pollen to which the patient is sensitized, the cutaneous test, first performed by Blackley,[4] is employed. A series of superficial scratches is made on the anterior aspect of the forearm, and to each abrasion a small amount of pollen is applied. A drop of tenth normal sodium hydroxid solution is added to assist in the solution of the pollen protein. Within half an hour, a characteristic wheal appears at the site of the abrasion on which the offending pollen has been placed. A

* Read before the Medical Society of the District of Columbia, March 14, 1923.
* From the Clinics of Applied Immunology, Woman's Welfare Association and the Central Dispensary and Emergency Hospital.
1. Noon: Prophylactic Vaccination Against Hay Fever, Lancet **1**: 1572, 1911.
2. Koessler: The Specific Treatment of Hay Fever (Pollen Disease), in Forchheimer's Therapeusis of Internal Diseases, **5**: 671, 1914.
3. Clowes: A Preliminary Communication on the Treatment of Autumnal Hay Fever by Vaccination with an Aqueous Extract of the Pollen of the Ragweed, Proc. Soc. Exper. Biol. & Med. **10**: 70, 1913.
4. Blackley: Hay Fever: Its Causes, Treatment and Effective Prevention, Ed. 2, London, 1880.

zone of redness surrounds the wheal, and there may be more or less itching of the adjacent skin. A positive skin reaction indicates that the patient is sensitized to that particular pollen which produces the wheal. The pollens to which the patient is not sensitized will cause no such cutaneous reaction.

GROUP REACTION

The later studies of Koessler, Goodale, Scheppegrell, Cooke and Vander Veer, and Walker have laid emphasis on the occurrence of "group reaction" in cutaneous testing. These observers have found that patients subject to June colds react to the pollens of *Gramineae*, and that patients suffering from the autumnal form react to the pollens of the large family of *Compositae*. For example, Cooke and Vander Veer [5] tested twenty cases of early hay-fever with the pollen protein of six of the most common grasses. With few exceptions, all the pollens yielded positive skin tests. Walker [6] tested his cases of autumnal hay-fever with the pollen of the ragweed, and also with the pollens of four other representatives of *Compositae*—goldenrod, daisy, golden glow and sunflower. He obtained positive results in from 21 to 50 per cent. of his cases.

The significance of group reaction in routine testing should be borne in mind. It indicates that the pollens of closely allied families of plants have in common a characteristic structural arrangement of the protein molecule. It is the latter which gives rise to the positive skin reaction. The formation of an urticarial wheal, indicative of a positive reaction, is due to an effusion of serum within the superficial layers of epithelial cells. It is the tissue response provoked by the presence of an irritant. The skin, in common with the blood and other tissues, it is believed, contains a specific proteolytic ferment which liberates from the protein molecule of the pollen a poisonous end-product. This product acts as the irritant in sensitive persons.

Our findings proved confirmatory of previous studies. Some of our patients, sensitized to the pollen of the short ragweed, were tested with the pollens of four other representatives of the *Compositae* group, with these results: Seven gave positive skin tests to the pollen of the giant ragweed and to the pollen of cosmos. Sixteen positive and two negative reactions were obtained with the pollen of tithonia. Forty-eight positive and ten negative reactions were obtained with the pollen of the wormwood. Thus, of a total of ninety tests, seventy-eight, or 86 per cent., proved positive. The positive cutaneous tests obtained with the pollen of tithonia—an insect-pollinated plant of South America to which our ragweed patients may never be exposed—furnish a striking example of group reaction.

In addition, tests were made in our fifty-seven autumnal cases of hay-fever with various wind-borne pollens which had been collected during the course of a hay-fever survey of the district. Four hundred and forty-two tests were performed with pollens other than those of the *Compositae* family. Of this total, 127, or 28.7 per cent., of the tests were positive. The pollens which gave the positive reactions represented twenty-one genera of plants, belonging to ten families. These included the grasses, trees and weeds. I have regarded these reactions with pollens which do not apparently give rise to seasonal disturbances as evidence of secondary or accessory sensitizations. Their significance has been discussed in another paper.[7] It seems, therefore, that multiple sensitization is the rule and not the exception. Moreover, the multiplicity of these skin reactions by no means invalidates the conception of specificity.

Scheppegrell,[8] for purposes of simplicity, divided the hay-fever pollens into four groups:

1. *Ambrosiaceae*, comprising the ragweed, *Gaertneria*, *Ivas* and *Xanthium*.
2. *Gramineae*.
3. *Artemisia*, comprising the hay-fever plants of the Pacific and Rocky Mountain states.
4. *Chenopodiaceae*, including the amaranths and *Rumex*.

He expressed the belief that a pollen extract made from any member of a group would be applicable to other members of the same group.

Watson and Kibler [9] are not in accord with Scheppegrell's views. They write:

> It has been stated by two or three investigators, particularly by Scheppegrell and by Goodale, that a patient sensitized to any grass may be desensitized by an extract made from any other member of the grass family and particularly timothy; also that a patient sensitized to any member of the *Compositae* may be desensitized by any other member of the same family. Scheppegrell has gone even further and grouped all *Rumex* (*Polygonaceae*), chenopods and amaranths together, asserting that they are so closely related that any member of the three groups may be used to desensitize against any other member of the same three groups. It is our opinion that further study and observation will prove that these statements are incorrect. Our skin tests and study have already convinced us of this, and we believe that the continued promulgation of these ideas, which many men accept as true, simply tends to confuse the subject and retard results.

In view of this conflict of opinion, this statement by Walker is by no means surprising: "There would seem to be as many different pollens causing hay-fever and as many different ways of treating hay-fever as there have been investigators."

DETERMINATION OF CAUSE

There are, nevertheless, safe and sane principles which help to determine the pollen responsible for the seasonal symptoms. The principle that symptoms of hay-fever are coincident with the blooming of wind-pollinated plants is fundamental.[10] This excludes from consideration the insect-pollinated plants, such as the goldenrod, golden glow, sunflower, daisy, rose and dandelion, and all the common fruit trees. These plants are peculiarly adapted for pollination through the agency of insects. Their blooms are conspicuous and brightly colored, and they are provided with honey glands. Their pollen grains, large in size, are surrounded with a sticky capsule. Very seldom, indeed, are they floating in the air in sufficient numbers to provoke an attack of hay-fever. A sensitive person may, however, suffer from transitory symptoms on sniffing a bouquet.

The fallacy that roses and goldenrod are causes of hay-fever still has a stronghold on the imagination of the laity and of part of the profession. It has been pointed out that the pollen of the goldenrod may give a positive skin reaction in some persons who are victims of

5. Cooke, R. A., and Vander Veer, A., Jr.: Human Sensitization, J. Immunol. **1**: 201 (June) 1916.
6. Walker, I. C.: Frequent Causes and the Treatment of Seasonal Hay-Fever, Arch. Int. Med. **28**: 71-118 (July) 1921.
7. Bernton, H. S.: The Significance of Multiple Cutaneous Reactions Observed in Hay Fever Subjects, to be published.
8. Scheppegrell, William: The Classification of Hay-Fever Pollens from a Biological Standpoint, Boston M. & S. J. **177**: 42 (July 12) 1917.
9. Watson, S. H., and Kibler, C. S.: Etiology of Hay-Fever in Arizona and the Southwest, J. A. M. A. **78**: 719-722 (March 11) 1922.
10. Hall, H. M.: Hay-Fever Plants in California, Pub. Health Rep **37**: 803-822 (April 7) 1922.

autumnal hay-fever. This is an expression of group reaction, the group in this instance being *Compositae*. The use, nevertheless, of an extract of goldenrod, singly or combined with that of the ragweed, is as unnecessary as it is unwarranted. It has no greater justification than the employment of an extract of *Tithonia* would have in the prevention of fall hay-fever.

Equal in importance to the appreciation of wind-pollinated plants as the cause of hay-fever is the date of the onset of symptoms and their duration. There is a remarkable regularity with which symptoms make their appearance. One patient limits her hay-fever season from Memorial Day to Independence Day. The vast majority of patients look forward with misgiving

TABLE 1.—*Pollens That Reacted Positively*

Name of Tree	Family Number	Date of Pollination
Black walnut	36	May 3
Hickory	36	May 3
Ironwood	37	April 15
Hazelnut	37	February 22
Alder	37	February 22
Black birch	37	April 15
Beechnut	38	May 2
Chestnut	38	June 15
Scarlet oak	38	April 15

to August 15 or August 20, which marks the advent of distress until the first frost. Blackley has well characterized the hay-fever season as the "annual torment." Field studies indicate that the onset of symptoms is coincident with the pollination of the plant to which the patient is sensitive.

In the eastern United States, the ragweeds, both the short and the giant, are chiefly responsible for the autumnal hay-fever which is by far the most prevalent type. In the New England states, the giant ragweed is rarely encountered. Accordingly, the diagnosis is much simplified. In a botanical survey of Rhode Island, I have not encountered a single specimen of the giant ragweed. In the Western states, the wormwoods play the important rôle.

The summer type of hay-fever, incorrectly called "rose fever," runs its course from May to the middle of July, and is coincident with the pollination of the grasses. In this connection, it may not be amiss to quote from Scheppegrell:[11]

> There are several thousand varieties of grasses, but our experience has shown that when the subject is sensitive to the pollen of one variety, he reacts to all the varieties tested, although to a different degree. This is an important factor in pollen therapy, as, otherwise, the large number of grasses that are usually found, even in the same locality, would make the question of developing an active immunity to hay-fever a hopeless proposition.

Cooke and Vander Veer[5] write, moreover:

> On the whole, we can say that an individual reacting to one [grass] reacts to all, which bespeaks a biological identity of the proteins derived from the pollens of the *Gramineae*. A further proof of this identity that can be mentioned is the fact that immunizing injections with the pollen of one grass gives clinical relief of symptoms in those cases that have reacted to all and have from time to time been purposely exposed to that form of grass to which they were not specifically immunized.

The pollen extract of timothy is extensively employed in preventive treatment, and forms, as it were, a blanket prescription for the summer type of hay-fever. I join Watson and Kibler in dissent from the views quoted above. The application of the general principle enunciated does not always hold for a given case. To illustrate, one patient in our series reacted to the pollen of rye and failed to react to the pollens of timothy, June grass, wild oats, orchard grass, meadow grass and red top. Moreover, of twenty-three patients reacting to one or more pollens of the grasses, only one reacted positively to corn pollen, the remaining twenty-two reacting negatively. Corn is biologically classed as a grass. Nevertheless, the phenomenon of group reaction was not observed.

Local field studies enable the immunologist to determine not only the flowering dates of various grasses, but also their degree of prevalence. These findings must be correlated with the patient's symptoms. The diagnosis of the offending plant may well be based on such studies; and it may be confirmed by cutaneous testing with the varying dilutions of protein extract, derived from the pollen of the grasses under suspicion.

A similar procedure may be followed in spring hay-fever, which is coincident with the pollination of the trees. The season of this early type of hay-fever begins in March and ends in June. The following case history will serve to illustrate the points emphasized as essential to correct diagnosis:

> A student, aged 17, had been a hay-fever victim for seven years. The duration of symptoms extended from the middle of April to the end of May. He was tested on two occasions with a total number of twenty-two pollens, eleven of which yielded positive skin reactions. These included pollens of nine trees and two grasses. The list presented in Table 1 embodies the family number and dates of pollination of the trees, the pollens of which reacted positively.

The pollens which gave negative cutaneous reactions were obtained from the trees listed in Table 2.

The family numbers are those adopted by Hitchcock and Standley,[12] who have arranged and numbered the plants consecutively according to generic relationship. It is noteworthy that members of Families 36, 37 and 38, all closely allied, have given positive skin reactions. This is a striking example of group reaction. The families of trees numbered 34, 40, 82, 97 and 124 have given negative reactions.

Symptoms of hay-fever in the patient under consideration were well marked about April 15. The ironwood, black

TABLE 2.—*Pollens That Gave Negative Cutaneous Reactions*

Name of Tree	Family Number	Date of Pollination
Crack willow	34	April 15
White poplar	34	March 20
Mock orange	40	May 18
Paper mulberry	40	May 1
White mulberry	40	May 1
Honey locust	82	May 8
Box elder	97	April 8
White ash	124	April 9

birch and scarlet oak, the positive reactors, were advanced in pollination on that day, as was the crack willow in the group of negative reactors. The survey of the District of Columbia revealed the fact that the number of ironwoods and black birches was small and that these specimens were found chiefly in the parks. The oaks, however, are numerous, and are used extensively for lining the city streets. The use of an extract of oak pollen would have been warranted in treatment. Unfortunately, when the patient first came under notice, no pollen extracts were available for testing with varying dilutions to determine the pollen to which he was most sensitive. I am happy to report that these extracts have since then been prepared.

The pollens of timothy and June grass, also, gave positive reactions in the patient. These are examples of secondary

11. Scheppegrell, William: Spring Hay-Fever, Its Cause, Prevention and Treatment, New York M. J. **109**: 793 (May 10) 1919.

12. Hitchcock and Standley: Contributions from the United States National Herbarium **21**, Flora of the District of Columbia and Vicinity, Washington, D. C., 1919.

or accessory sensitizations, in contradistinction to the primary sensitizing factors—the pollens of the trees. Massive doses of the former may, in my opinion, give rise to transitory symptoms. They may account for the "slight colds" of short duration to which hay-fever patients are subject out of their customary season. It is of interest in this connection to note that the dates of pollination of June grass and timothy were May 16 and June 11, respectively. By this time the hay-fever symptoms were on the decline.

It is to be emphasized that observations in the field are basic in importance, and that they must be correlated with the clinical picture. They make for accurate diagnoses, for intelligent and appropiate treatment, and for better therapeutic results.

TREATMENT

The chief aim in treatment is to bring the patient to a point of tolerating the toxic material which gains entry through the respiratory tract. Desensitization against the specific excitant assures the patient freedom from symptoms. The credit belongs to Noon and Freeman for devising the method of active immunization, which is the method in vogue at present. A series of subcutaneous injections with solutions of protein, prepared from the offending pollen, is administered at regular intervals with gradually increasing concentrations. The treatment, theoretically, should be preseasonal and terminate with the approach of the hay-fever season. It is evident that during the season the patient is inhaling the toxic material, thus rendering subcutaneous additions unnecessary. The statement, however, is made that seasonal treatment tends to diminish the severity of symptoms.

Various measures have been employed for the preparation of protein extract from pollen. Noon and Freeman [1] obtained a solution of protein by alternating and freezing and thawing the pollen in distilled water. After filtration, the aqueous extract was boiled for ten minutes in sealed tubes. Clowes [3] first precipitated the pollen with acetone, followed by extraction with distilled water. Lowdermilk [13] substituted physiologic sodium chlorid solution for distilled water. Clock,[14] however, recommended as an extractive a fluid consisting of 33⅓ per cent. saturated sodium chlorid and 66⅔ per cent. glycerol. Koessler [2] used an 8.5 per cent. solution of sodium chlorid, which he sometimes precipitated with ten times its volume of 95 per cent. alcohol. Goodale [15] soaked the grains in water for a few hours and added alcohol sufficient to make a dilution of from 13 to 15 per cent. by volume. Walker [6] preferred a 12 per cent. alcoholic saline solution. Rackemann [16] added to physiologic sodium chlorid solution a slight amount of alkali in the form of 1 per cent. normal sodium hydroxid. Coca [17] similarly employed an alkaline extracting medium consisting of sodium chlorid and sodium bicarbonate in such concentration that 10 c.c. of the final fluid equaled about 3 c.c. of tenth normal alkali.

The sterility of the extracts was effected by filtration through Berkefeld candles. The belief in general was held that the potency of the solutions was determined by the amount of nitrogen present. Phenol (carbolic acid), trikresol, alcohol and glycerol were the reagents employed, on which dependence was placed for preserving the potency of the extracts and for maintaining their sterility.

The results achieved in the prevention of hay-fever are encouraging. Noon and Freeman [18] reported, in 1914, complete relief in 30 per cent., and no improvement in 11 per cent. of their series of eighty-four vernal cases. Table 3 summarizes the results of several American investigators, which have been compiled from the literature. The attempt has been made, so far as it has been possible, to record only the cases of the autumnal type which had received preseasonal treatment. Exceptions to this rule are so indicated. Moreover, I have concerned myself in this study only with the percentage of those entirely relieved and those unimproved. The table indicates that of 2,684 patients receiving prophylactic treatment (with few exceptions), 12.8 per cent. have had complete relief and 16.5 per cent. have failed to receive any benefit. The remaining 70.7 per cent. enjoyed varying degrees of improvement. It is, indeed, reassuring that the results of the last few years excel those of previous years.

TABLE 3.—*Results of Preseasonal Treatment of Autumnal Hay-Fever*

Authors	Year	Number of Patients	Per Cent. in Whom Symptoms Were Entirely Relieved	Per Cent. in Whom Symptoms Were Unimproved
Koessler, in Forchheimer's Therapeusis **5**: 671, 1914.....	1914	36	11.1	22.2
Oppenheimer and Gottlieb: New York M. J. **101**: 229, 1915	1915	6	16.6	16.6
Strause and Frank: J. A. M. A. **70**: 712 (March 4) 1916.....	1916	241*	18.6	15.6
Rackemann: Boston M. & S. J. **182**: 295 (March 18) 1920....	1920	91	8.9	13.1
Walker: Arch. Int. Med. **28**: 71 (July) 1921	1921	202	22.0	6.5
Cooke and Vander Veer: J. Immunol. **1**: 201 (June) 1916; Health News, N. Y. State Dept. Health **16**: 204, 1921..	1912	5	0.0	40.0
	1913	50	4.0	16.0
	1914	90	2.0	20.0
	1915	180	20.0	5.0
	1916-1920	1,774	25.0	10.0

* Various types of hay-fever.

It is to be recalled that the results of preventive inoculation, quoted above, have been those achieved by investigators in this relatively new field of therapy, and that the pollen extracts employed by them have been products of their own laboratories. The profession at large has of necessity been dependent on the commercial products of manufacturers of biologic products. Because of the limited number of reagents utilized for accurate diagnosis, and because of the limited time available for the entailed study of hay-fever patients, the indiscriminate use of pollen extracts and the employment of shotgun preparations have followed, as a matter of course, and have been responsible for disappointments.[19] Undue emphasis has been placed on the rôle of insect-pollinated plants, and the administration of their pollen extracts in the prevention of hay-fever is not justified by scientific evidence. The significance of group reaction in cutaneous testing has been overlooked, and commercial literature has been unintentionally misleading.

The therapy of hay-fever is of such recent date that no standard method of extraction of pollen protein and no standard method of treatment has as yet been adopted. There is, in fact, no "United States standard

13. Lowdermilk, R. C.: Hay-Fever, J. A. M. A. **63**: 141 (July 11) 1914.
14. Clock, R. O.: Comparative Value of Methods of Preparing Pollen Antigen, J. Infect. Dis. **21**: 523 (Dec.) 1917.
15. Goodale: Pollen Therapy in Hay Fever, Boston M. & S. J. **173**: 42, 1915.
16. Rackemann, F. M.: The Specific Treatment of Hay-Fever, Boston M. & S. J. **182**: 295-301 (March 18) 1920.
17. Coca, A. F.: The Preparation of Fluidextracts and Solutions for Use in the Diagnosis and Treatment of the Allergies, with Notes on the Collection of Pollens, J. Immunol. **7**: 163-178 (March) 1922.
18. Freeman: Vaccination Against Hay Fever: Report of Results During the Last Three Years, Lancet **1**: 1178, 1914.
19. Scheppegrell, William: Successful Treatment of Hay-Fever and Causes of Failure, New York M. J. **116**: 196 (Aug. 16) 1922.

of potency." Reference has been previously made to the diverse opinions of authorities.

It accordingly seemed advisable to undertake a comparative study of the potency of commercial extracts on which the general profession had to rely. Since the autumnal type of hay-fever is the most prevalent, attention has been confined to the pollen extract of the short ragweed. Our control extract of short ragweed pollen was prepared, according to the method Walker, in a 12 per cent. alcoholic saline solution. Six dilutions were made from the stock solution, which contained 0.2 mg. of nitrogen per cubic centimeter. The dilutions, as shown in Table 4, ranged from 1:100 to 1:24,300. Six commercial extracts, designated by numbers 1 to 6 inclusive, were studied. Two dilutions were made from the highest concentration in which the extracts were marketed to approximate the dilutions of the control, the amount of nitrogen serving as a basis of computation. Thirty-nine patients with autumnal hay-fever were tested by Dr. Harrison and myself. Two dilutions of each of the commercial extracts, 1 to 5 inclusive, and six dilutions of the control extract were used. Sixteen of this series of patients were in addition tested with the two dilutions of commercial extract, numbered 6.

TECHNIC OF TESTS

Along the anterior aspect of one forearm, a drop of each dilution of the control extract was placed in succession at half-inch intervals, the highest dilution being uppermost. At the bend of the elbow, a drop of alcoholic saline solution was placed and used as a control. On the anterior aspect of the other forearm, two drops, one of each dilution of all the commercial preparations, was placed in succession at right angles to the long axis. The higher dilution was located on the internal aspect and the lower dilution on the external aspect of the arm, respectively. A superficial scratch was made through each drop with a needle, and the reaction was read at the end of half an hour. A wheal of 5 mm. or more was recorded as ++, and a wheal of 4 mm. or less was recorded as +, and an areola without wheal as ±.

TABLE 4.—*Number of Strongly Positive Cutaneous Reactions Obtained with Control and Commercial Extracts*

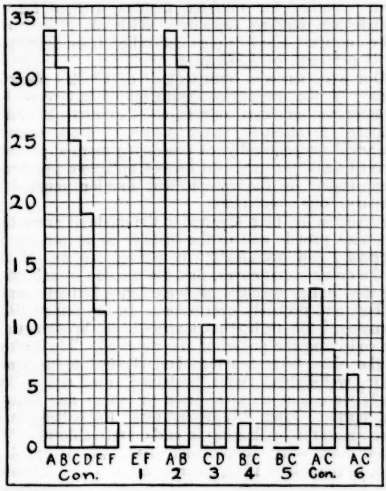
	A	B	C	D	E	F
Dilution	1:100	1:300	1:900	1:2700	1:8100	1:24300
Nitrogen, mg. per c.c.	0.2	0.066	0.022	0.0074	0.0025	0.00083
Control extract	34	31	25	19	11	2
Commercial extract 1	..	..	..	..	0	0
Commercial extract 2	34	31	..	..	..	..
Commercial extract 3	..	..	10	7	..	..
Commercial extract 4	..	2	0	..	..	..
Commercial extract 5	..	0	0	..	..	..
Control extract	13	..	8	..	..	..
Commercial extract 6	6	..	2	..	..	..

RESULTS OF TESTS

Of the thirty-nine patients submitted to the cutaneous testing, thirty-four gave a ++ reaction with the highest concentration of our ragweed extract. For purpose of brevity, only the ++ positive reactions are used in the table to serve as a basis of comparison. Table 4 indicates the number of strongly positive reactions obtained with the control extract and with each of the two dilutions of the commercial preparations.

The chart demonstrates the fact that Commercial Preparation 2 yielded reactions identical with the control in the two highest concentrations, that Preparations 6, 3 and 4 failed to give positive reactions in thirteen, twenty-seven and fifty-four tests, respectively, as compared with the control, and that Preparations 1 and 5 failed entirely to provoke skin reactions. If we accept the view that the intensity of the cutaneous reaction is determined by the protein content of the test solution, we are confronted with two possibilities—either the protein content of five of the commercial preparations has been misrepresented, or there has been a marked and rapid deterioration of the product.

Vander Veer [20] pursued a similar course of study and tested four of the best known commercial extracts. He used as a control the "Cornell preparation," prepared according to the method of Coca. He performed ophthalmic and intracutaneous tests with the preparations in eighteen hay-fever subjects. Not all the patients however, were tested with each dilution of the different preparations. He found that only the very sensitive patients gave any ophthalmic reaction with the commercial products. Moreover, he noted that the latter extracts did not approximate the strength of his control



Number of ++ reactors: *Con.*, control; 1, 2, 3, 4, 5, 6, preparations; *A, B, C, D, E, F,* dilutions.

preparation, which had 0.01 mg. of nitrogen per cubic centimeter, and that the activity of the most potent commercial extract equaled that of his preparation containing 0.005 mg. of nitrogen per cubic centimeter. Vander Veer's conclusion is noteworthy:

> As it has been our experience that even our most sensitive cases (with very few exceptions) require for therapeutic effect a maximum dose of pollen extract containing at least 0.025 to 0.05 mg. of nitrogen, while the less sensitive may need as high as 0.1 or 0.2 mg. of active pollen nitrogen, it is difficult to see how a good result can be expected with the use of these comparatively weak commercial preparations except in the very sensitive cases, which constitute a relatively small percentage of the total. To obtain a full measure of relief, stronger extracts should be used.

POLLEN EXTRACTS

It is clear from the foregoing studies that one criterion for the therapeutic efficiency of pollen extracts is the nitrogen content, based on chemical analysis. It

20. Vander Veer, A., Jr.: A Comparison of Various Pollen Extracts with Reference to the Question of Their Therapeutic Value in Hay-Fever, J. Immunol. 7:113-118 (March) 1922.

is equally obvious that the nitrogen content is stable. The potency of extracts is, however, a variable factor, and preservatives, such as alcohol, trikresol and phenol, are added to prevent deterioration. Clock is deserving of much credit for calling attention to the fact that chemical analysis fails to demonstrate the antigenic qualities of pollen extracts. Such analysis reveals only the amount of pollen protein present in solution. Clock [21] has shown that a practical method of determining the antigenic properties of pollen extract is by means of the complement-fixation test. The amboceptor in this biologic test is the serum of rabbits which have been immunized by repeated injections, intravenous or intraperitoneal, with protein solution. He has, furthermore, devised a method of preparing a stable antigen, by the use of concentrated salt solution and glycerol.[22] Pollen extracts, prepared by his method, have remained for fourteen months without loss of complement binding capacity. With his glycerolated pollen antigen, Clock [23] obtained relief from symptoms in 84 per cent. of 1,578 cases.

Our experience is confirmatory of Clock's observations. In the preventive treatment of hay-fever last summer, we employed our ragweed extracts M and P prepared in alcoholic saline solution. Both extracts gave evidence, clinically, of possessing marked potency. Nevertheless, they showed loss of antigenic properties when tested by the complement fixation method in January, four months later.

Attention has been directed to the mode of extraction of pollen protein and to the manner of preserving its antigenic, and presumably its active, content. I am of the opinion, moreover, that the method of collecting ragweed pollen assumes an importance hitherto undescribed, and probably overlooked. In the fall of 1921, I employed the method recommended by Wodehouse,[24] for collecting the pollen of the ragweed. The catkins of the plant were removed and allowed to dry in a warm, well-lighted room, protected from dust. The bracts were then stripped from the stems and ground in a mortar. From this ground mass, the pollen grains were separated by floating in carbon tetrachlorid. The pollen dust, when filtered and dried, was of an olive drab. In the fall of 1922, I employed the method known to botanists as "bagging." Bags made of glazed paper were drawn over the plants and securely fastened. The pollen grains, as they were shed, remained within the bags, from which they were readily gathered. The pollen dust, secured in this manner, was of a bright golden yellow, similar to that of the pollen-laden anthers. The difference in color between the yields of pollen obtained by grinding and by "bagging" was most striking. It is noteworthy that the golden yellow of the mature grains is slightly bleached by carbon tetrachlorid.

The immaturity of part of the pollen yield obtained by the method of Wodehouse may account for the difference in color. It will be recalled that the blooms of the ragweed mature in succession. Consequently, when the catkins are dried and ground, the pollen consists of a mixture of mature and immature grains. In fact, in the process of removing the catkins from the plant, there is a substantial loss of the ethereal grains, owing to the manipulation. In the plant kingdom, color changes accompany the process of maturation, which also involves physicochemical transformation. Obviously, an extract prepared from the mature grains is likely to have more specific antigenic properties than one made from a mixture of mature and immature pollen grains. It must be borne in mind that it is only the mature pollen that reaches the mucous membranes of susceptible persons and excites symptoms of distress.

The interpretation which I have ventured to give is suggested by the following study: [25] Ragweed plants, collected, June 21, 1922, before the appearance of catkins, were dried and pulverized. Cutaneous tests with the plant powder were performed in twenty-three cases of autumnal hay-fever. The powder gave negative skin reactions in eighteen, and weakly positive in five cases. In no instance did the powdered plant provoke a skin reaction comparable with that produced by the ragweed pollen. The conclusion seems warranted that the peculiar property of the pollen grains which calls forth the specific proteolytic ferment in the causation of an urticarial wheal is not shared by the rest of the plant structure. The extreme degree of specificity is thus made evident. Therefore, in order to make desensitization complete, it is essential that the extracts be derived from the exciting agent—the mature pollen.

RESULTS OF PROPHYLAXIS

Reference has been made to the results of preventive treatment against autumnal hay-fever. An analysis of the statistics, dating from 1912, has indicated, as an average, complete relief in about 13 per cent., partial relief in 71 per cent., and failure in 16 per cent. of the cases treated. The outstanding feature is the constant failure of a certain percentage to secure any relief of symptoms. This fact has seemed worthy of an explanation. Our experience during the last year in the prophylactic treatment of fifty-six patients suffering from the fall type of hay-fever has thrown some light on the problem.

TABLE 5.—*Results of Preseasonal Treatment*

Symptoms	Patients: Number	Patients: Per Cent.	Average Age, Years	Average Duration, Years	Average Number of Injections	Average Percentage of Local Reactions Following Injections
Unimproved.....	6	10	42	13	16	32.6
Relieved, 25 per cent.	9	16	33	10	17	75.0
Relieved, 50 per cent.	9	16	37	17	16	86.0
Relieved, 75 per cent.	18	32	40	17	16	84.0
None or negligible....	14	25	40	20	16	84.4

Table 5 embodies the results. It shows that 25 per cent. of our patients have been relieved of symptoms, that 65 per cent. have been benefited from 25 to 75 per cent., and that 10 per cent. have been unimproved. Our extracts M and P were used successively in all cases. It is evident from Table 5 that age and the duration of the disease do not affect the outcome of treatment. Likewise, a detailed analysis indicates that the degree of sensitiveness, as determined by skin tests with varying dilutions of pollen protein, is no criterion as to the results of therapy. For example, a man, aged 59, whose disease was of three years' duration, showed skin sensitiveness to ragweed protein in a dilution of 1:100. Despite the short duration of the disease and the apparent lack of a high degree of sensitiveness, this patient was not benefited by fourteen injections. On the contrary, two women, aged 54 and 60 years, respectively, who had suffered all their lives

21. Clock, R. O.: Antipollen Serum for Standardization of Pollen Antigen, J. Infect. Dis. **22**: 80 (Jan.) 1918.
22. Clock, R. O.: A Stable Pollen Antigen, J. Infect. Dis. **21**: 387 (Oct.) 1917.
23. Clock, R. O.: Hay Fever and Its Treatment with Glycerolated Pollen Antigen, J. M. Soc. New Jersey **19**: 63 (March) 1922.
24. Wodehouse, R. P.: Preparation of Vegetable Food Proteins for Anaphylactic Tests, Boston M. & S. J. **175**: 195 (Aug. 10) 1916.
25. Bernton, H. S.: The Biological Aspects of Hay Fever, Rhode Island M. J., to be published.

from seasonal hay-fever, were entirely relieved of symptoms by treatment. The skin sensitiveness in both of these cases reached a dilution as high as 1 : 20,000.

Early in the course of our work, it became evident that some patients responded to the subcutaneous injection of pollen protein with a local reaction. This reaction consisted of swelling, redness or itching, or of a combination of these signs. At no time was the reaction severe enough to incapacitate a patient, or even give the patient any degree of discomfort. Other persons were unaffected in that there was no local response to the injection of foreign protein.

It is indeed, noteworthy, as shown in Table 5, that only 32 per cent. of the subcutaneous injections of ragweed protein have caused local reactions in those patients unimproved by treatment, whereas, 84 per cent. of injections have produced local response in those who have enjoyed freedom from symptoms. This observation is in accord with analogous experiences in the prophylaxis against other diseases. In vaccination against smallpox, typhoid fever and diphtheria, the local reactions that ensue are indicative of the marshaling of the antibodies of defense. The opinion is warranted that failure to elicit in patients a local response to subcutaneous injection of pollen protein is evidence of a refractory state of desensitization. This may be overcome by injections with higher concentrations. The indications are clear that each injection should be of such concentration as to yield a local reaction. No set rules can be applied. Due diligence and good judgment must be exercised, however, in the avoidance of constitutional reactions.

The foregoing opinions, suggested by our analysis, find confirmation in this case history:

A man, aged 38, had been a sufferer from autumnal hay-fever for thirty-four years. His knowledge of the disease was as extensive as his symptoms were severe. After having received four injections, he made mention of the local response provoked by our extract M in high dilution. He also volunteered the information that commercial extracts, with which he had been treated in previous years, failed to cause any local reaction, save toward the end of the prescribed course of treatment. During the hay-fever season, the administration of such commercial extracts in low dilution was followed by local reaction. The greater the local reaction, the greater was the clinical relief afforded by that injection.

TABLE 6.—*Concentration of Extract*

Concentration of Extracts Yielding Positive Cutaneous Reactions	Number of Patients	Concentration of Extracts Used in Treatment
1:100	1	1:500
1:2,700	1	1:100
	5	1:500
	2	1:5,000
1:8,100	2	1:500
	2	1:1,000
	1	1:5,000
1:24,300	3	1:500
	5	1:1,000
	8	1:5,000
	1	1:10,000

I base my opinion on the evidence submitted that a local reaction following subcutaneous injection of protein solution is an assurance of some clinical relief.

I cannot agree with the view expressed that the concentration of extract used in treatment shall not be capable of exciting a cutaneous reaction. Cutaneous reactions are too uncertain to serve as an absolute guide in treatment. In our comparative study of commercial extracts, thirty-one patients were tested at varying stages in their course of treatment. It will be recalled that six dilutions of our extract were used as controls. It is of interest to note, in Table 6, the concentration of extract with which treatment was being carried on, and the concentration of extract which yielded cutaneous reactions.

Thus, of thirty-one patients tested during treatment, twenty-six were receiving injections with concentrations much higher than those which yielded positive skin tests. No untoward effects were noted. Walker,[6] in discussing the influence of treatment on cutaneous sensitiveness, says:

In practically three fifths of the cases, the intensity of the skin test diminished 100 times, and in practically the remaining two fifths it was decreased at least twenty times; the larger the number of treatments given, the greater was the decrease in the intensity of the skin test.

We have found Walker's schedule of treatment very helpful, and have modified it to meet individual requirements.

The early investigators, Dunbar,[26] Noon and Freeman, have advocated the use of the ophthalmic test in establishing the sensitivity of the patient and in determining an initial nontoxic dose. Koessler, however, reports that "in a series of twenty patients, the effect of every injection was controlled by the ophthalmic reaction in the endeavor to use it as a constant guide in determining the subsequent dose to be given. This has been found unnecessary and misleading."

COMMENT

It is obvious, therefore, that no satisfactory method exists either for the classification of patients or for guidance in treatment. Herein is the opportunity offered for useful investigation.

Accurate diagnosis and the administration of potent extracts of pollen protein are the essentials in the prophylactic treatment against hay-fever. Nevertheless, there are contributory factors that may affect the outcome. The upper air passages of sensitive persons merit the attention of the specialist. Surgical measures should be employed to remove mechanical obstruction or to correct deformity.

The use of bacterial vaccines has from time to time been included in the treatment of hay-fever. Vaccine therapy in chronic disorders is based on the assumption that the bacteria responsible for the infection have become immune to the tissues of the host. As the result of retarded growth, little bacterial substance is liberated to stimulate the production of immune bodies. Therefore, vaccines supposedly supply the deficiency. It is difficult to reconcile this view with conditions which obtain in uncomplicated hay-fever. This disease, according to the preponderance of evidence, is an expression of protein intoxication. The rôle which bacteria play is seemingly unimportant. The paroxysms of sneezing and the constant rhinorrhea tend to dislodge the bacteria and wash away their toxins. Self-purification becomes the first stage of self-preservation.

Active immunization, despite its limitations, offers hay-fever victims more chance for cure and relief than any other therapeutic measure. Temporary removal to localities where the offending plant does not flourish is possible for a limited number of subjects. Those who are obliged to remain at home during the critical season may, nevertheless, derive comfort through the observance of simple hygienic measures. Wearing

26. Dunbar: The Present Status of Our Knowledge of Hay Fever, J. Hyg. **13**:105, 1913.

amber-colored glasses and driving in closed automobiles may make trips outdoors more inviting. Women will not hesitate to wear veils and combine fashion with comfort. Flowers and dusts of all kinds must be avoided. Bedroom windows, kept closed during the day, will prevent the ingress of pollen grains. During sleeping hours, a screen of muslin, saturated with water, may be placed in front of open windows to admit fresh air. Vigorous exercise outdoors, as tennis and baseball, should be avoided. With increase in the number and depth of respirations, a larger amount of pollen is inhaled, which aggravates symptoms. Frequent washing of the hair is advised as a means of removing the pollen grains which may have become enmeshed. Avoidance of sudden changes in temperature and of exposure to drafts is of especial importance. Exposure of the body in undressing or getting out of bed will cause a temporary cooling of the body surface and a consequent paroxysm of sneezing. For the same reason, sensitive persons should guard against exposure to electric fans.

The accomplishments of the past augur well for the future of prophylaxis against hay-fever.

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THE POTENCY OF SOME COMMON DIGITALIS AND STROPHANTHUS PREPARATIONS *

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It has frequently been emphasized that it makes little difference what type of digitalis preparation is used, as long as it is active and is given in dosage sufficient to produce its physiologic effects. Not very long ago the digitalis in general use was of low strength, and the results obtained from it clinically were naturally disappointing. Pratt,[1] in 1910, examined some of the common digitalis preparations of that time, and found them very weak. We knew that because of the large amount of work, both clinical and experimental, dealing with digitalis therapy that has appeared recently, greater attention has been given to the problem of supplying active digitalis preparations. We felt that it would be of some interest to make a survey at this time of some of the commoner types of digitalis preparations to determine their potency. We chose for this purpose particularly those preparations that are readily available to the majority of cardiac patients. We have made no effort, and it would be very difficult, in a work of this kind, to examine all the common preparations of digitalis.

Except for a few preparations obtained from the drug store in this hospital, all the samples tested were procured from pharmacists in different parts of Boston. An effort was made to get the drug that is commonly dispensed when a patient presents a prescription for digitalis. We tried to determine the age of the preparations obtained, and found this impossible, since in most cases the drug was dispensed from an undated bottle. We found that the druggists were buying their digitalis in small amounts, a practice we commend as it avoids the use of deteriorated drugs.

The method we employed was a modification of the cat method of Hatcher. Instead of the buret with small cannula in the vein, we made our injections with a tuberculin syringe graduated in 0.01 c.c., inserting the small needle directly into the exposed right saphenous vein of the anesthetized cat. One tenth of the estimated lethal dose of the preparation being tested was injected every six minutes. An electrocardiogram (Lead 2) was taken before any of the drug was given, and was repeated five minutes after each injection. The animal was constantly attached to the galvanometer, and a careful watch was kept for the earliest appearance of ventricular extrasystoles, since, following the suggestion of Levine,[2] these seem the best evidence of toxic action on the cat's heart. This method of injecting one tenth of the estimated lethal dose every six minutes, while subject to small error, is probably as accurate as the method of continuous injection.

In Table 1 the minimal toxic dose (M. T. D.) is the amount of the drug that had been injected when ventricular extrasystoles appeared. Earlier evidences of digitalis action, as slowing of the heart rate due to vagal stimulation, inversion of the T waves, delayed auriculoventricular conduction, and changes in the form of ventricular complex, appeared in most cases, but were inconstant in their occurrence and were deemed unsatisfactory as indexes of digitalis intoxication. The minimal lethal dose (M. L. D.) is the amount necessary to kill the animal. The minimal lethal dose per kilogram is the so-called cat unit. The percentage of the minimal lethal dose that is toxic is that portion of the actual lethal dose that was injected before ventricular extrasystoles appeared. The minimal lethal dose was figured in cubic centimeters, since all preparations were given in liquid form; it was also determined in terms of the powdered leaf (1 c.c. of the tincture equals 0.1 gm. of powdered leaf). Certain exceptions to this occur in the table. For testing the Digitora tablets, a maceration tincture was made according to U. S. P. directions of such strength that 1 c.c. equals 0.13 gm. of the Digitora tablets. Digalen is of such strength that 1 c.c. equals 0.3 mg. of amorphous digitoxin. We found this preparation quite weak, being only one third as strong as it should be if it contained 0.3 mg. of active digitoxin per cubic centimeter. Tincture of strophanthus, as will be seen from the table, is about fifty times more active than tincture of digitalis when given intravenously. That these tinctures are given in practically the same dose by mouth can only be explained by the fact that tincture of strophanthus is poorly absorbed from the digestive tract, or it may be partially destroyed before absorption. In the case of strophanthone, no mention is made by the manufacturers of the strength of this preparation in terms of crystalline strophanthin. We found the preparation quite weak, especially if used in the dosage suggested by the makers. In the other strophanthin preparations, 1 c.c. is equivalent to 1 mg. of the crystalline strophanthin. In Arnoud's Ouabaine, 1 c.c. equals 0.5 mg. of crystalline ouabain.

The mode of action of all preparations was essentially the same. The early electrocardiographic changes have already been mentioned; they were slowing of the heart rate, delayed P-R conduction, and inversion or

* From the Medical Clinic of the Peter Bent Brigham Hospital, and the Medical School of Harvard University.

1. Pratt, J. H.: The Importance of Determining the Potency of Digitalis Preparations, Boston M. & S. J. **163**: 279, 1910.

2. Levine, S. A.: The Action of Strophanthin on the Living Cat's Heart, J. Exper. Med. **29**: 485, 1919.

alteration of the T waves. The first evidence of toxic effect was the appearance in the majority of instances of occasional ventricular extrasystoles and sometimes of complete heart block, or definite changes in form of the ventricular complex. Following the extrasystoles which came from one or several foci, there occurred a ventricular tachycardia, during which there was a progressive increase in heart rate, and increasing impairment of intraventricular conduction. After this tachycardia a ventricular fibrillation occurred, and death ensued in a short time. The mechanism of death was always the same, the heart stopping before the respirations. Other changes noted in the cat during the injection were lip-licking (an early sign of nausea), retching and vomiting. Urine was voided in some cases, and a few times feces were expelled after the toxic dose had been exceeded. On postmortem examination, the hearts usually were found strongly contracted. From the fact that the results obtained were an old lot, and probably represents some prewar stock, possibly as old as 1914. It was found to have only one thirtieth of the expected strength. Its present weakness is probably due to its age, being a result of deterioration of the strophanthin due to changes in the H-ion concentration, as pointed out by Levy and Cullen.[4]

Two fat-free tinctures were included in the preparations examined. There seems to be no advantage in their use. They had the same effect on the cats as regards the occurrence of retching and vomiting, and they are of no greater potency than the ordinary tinctures. The Digitora tablets we tested were made of very active leaf, and have a cat unit that corresponds to the expected standard. However, any good powdered leaf can be made up into pills by a pharmacist at less cost to the patient. Whereas most of the preparations were made by widely known pharmaceutical houses, we tried one tincture made by a local druggist from

TABLE 1.—*Potency of Digitalis and Strophanthin*

Cat No.	Drug: Name	Drug: Maker	Cat Weight, Kg.	Toxic Dose M. T. D.	Lethal Dose M. L. D.	Per Cent. of M. L. D. That is Toxic	M. L. D. per Kg. in C.c.	M. L. D. per Kg. in Gm.	Margin of Safety M. L. D. — M. T. D. per Cent.
3	Tincture digitalis	E. R. Squibb & Sons, New York	2.1	0.63	1.26	50	0.6	0.06	50
7	Tincture digitalis	E. R. Squibb & Sons, New York	3.4	1.36	2.38	57	0.7	0.07	43
13	Tincture digitalis (fat free)	E. R. Squibb & Sons, New York	3.9	1.17	2.73	43	0.7	0.07	57
31	Tincture digitalis (fat free)	E. R. Squibb & Sons, New York	4.2	1.68	.....	50*	0.8*	0.08*	..
19	Tincture digitalis (old)	E. R. Squibb & Sons, New York	2.5	1.25	2.25	56	0.9	0.09	44
1	Tincture digitalis	Parke Davis & Co., Detroit	4.5	1.8	4.5	40	1.0	0.1	60
9	Tincture digitalis	Parke Davis & Co., Detroit	2.4	1.2	2.64	45	1.2	0.12	55
33	Tincture digitalis (old)	Parke Davis & Co., Detroit	2.5	1.5	2.25	66	0.9	0.09	34
4	Tincture digitalis	John Wyeth & Bro., Philadelphia	2.0	1.2	2.4	50	1.2	0.12	50
14	Tincture digitalis	John Wyeth & Bro., Philadelphia	2.7	1.62	2.43	67	0.9	0.09	33
23	Digitol	H. K. Mulford & Co., Philadelphia	2.9	0.87	3.77	23	1.3	0.13	77
26	Digitol	H. K. Mulford & Co., Philadelphia	3.8	1.96	3.66	54	0.96	0.096	46
36	Tincture digitalis	Burroughs Wellcome Company	2.7	3.24	4.32	75	1.6	0.16	25
40	Tincture digitalis	Burroughs Wellcome Company	3.4	1.02	4.08	25	1.2	0.12	75
6	Tincture digitalis	Norwich Pharmacal Company	2.4	1.68	3.33	50	1.4	0.14	50
18	Tincture digitalis	Norwich Pharmacal Company	2.5	1.0	2.25	44	0.9	0.09	56
8	Tincture digitalis	Huntington Avenue Pharmacy	2.6	2.08	4.16	50	1.6	0.16	50
10	Tincture digitalis	Huntington Avenue Pharmacy	1.8	1.44	2.34	62	1.3	0.13	38
38	Digitora	Upjohn Company, Kalamazoo	2.8	1.4	2.24	62	0.8	0.104†	38
39	Digitora	Upjohn Company, Kalamazoo	3.6	2.16	3.24	67	0.9	0.117	33
25	Digalen	Hoffman LaRoche Chem. Wks., N. Y.	3.5	9.06	14.5	69	4.1	1.21	31
32	Digalen	Hoffman LaRoche Chem. Wks., N. Y.	2.0	4.6	6.0	77	3.0	0.9	23
29	Tincture strophanthus	Parke Davis & Co., Detroit	2.8	0.56	0.76	73	0.026	2.6§	27
34	Tincture strophanthus	Parke Davis & Co., Detroit	2.5	0.375	0.525	62	0.021	2.1	38
11	Strophanthin Boehringer	Merck & Co., New York	2.8	4.31	8.62*	..	3.07	3.07¶	..
24	Strophanthin Boehringer	Merck & Co., New York	3.0	4.5	7.8	58	2.6	2.6	42
16	Strophanthin	Merck & Co., New York	2.1	0.42	0.42	100	0.20	0.20#	0
17	Strophanthin	Merck & Co., New York	3.0	0.45	0.57	79	0.19	0.19	21
21	Strophanthone	Parke Davis & Co., Detroit	3.9	0.24	1.67	21	0.42	....	79
22	Strophanthone	Parke Davis & Co., Detroit	3.9	1.09	1.4	78	0.36	....	22
12	Ouabaine	Nativelle, Paris	2.2	0.33	0.48	68	0.218	0.109#	32
41	Ouabaine	Nativelle, Paris	2.8	0.4	0.51	78	0.182	0.091	22

* Estimated from minimal toxic dose (M. T. D. = 50 per cent. of minimal lethal dose).
† Tincture made of such strength that 1 c.c. = 0.13 gm.
‡ Mg. of digitoxin.
§ Mg. of strophanthus leaf.
¶ Mg. of crystalline strophanthin.
# Mg. of crystalline ouabain.

practically the same in all of our experiments, we feel that digitalis and strophanthus probably act in a similar way on the living cat's heart.

Although most of the preparations we tested were of recent make, being probably less than 6 months old, we examined two tinctures that we had had in the laboratory for some time. One of these, a tincture made by E. R. Squibb & Sons, was tested by Dr. Levine [3] in 1919. It was made in about June of that year. We tested it three and one-half years later, and found it as potent as it was then (Experiment 19). Another old tincture was made by Parke Davis & Co., dated January, 1921. Two years later we found the same potency that Dr. Levine found in 1921. Both these tinctures had been kept tightly corked in a refrigerator at about 6 C. There is apparently little or no deterioration of a properly kept tincture. The Boehringer's Strophanthin in ampules used was from English leaves (Experiments 8 and 10). The tincture was slightly weaker than the expected standard.

We usually used two cats for each drug. If we found a lack of close agreement between the results obtained in two experiments, we repeated the work until we were satisfied with the results. In some cases we used as many as five cats before feeling sure we had determined the actual cat unit for the preparation we were testing.

As we were especially interested in the clinical application of these findings, it occurred to us that it might be of interest to determine accurately the number of drops in a cubic centimeter of the preparations examined. We knew from previously published investigations that the number of drops per cubic centimeter in a tincture was considerably greater than is generally recognized. We counted the drops in a cubic centi-

3. Levine, S. A., and Cunningham, T. D.: The Margin of Safety of Intravenous Digitalis in Cats, Arch. Int. Med. **26**: 293 (Sept.) 1920.

4. Levy, R. L., and Cullen, G. E.: Deterioration of Crystalline Strophanthin in Aqueous Solution: Its Relation to Hydrogen Ion Concentration, and a Method for Its Prevention, J. Exper. Med. **31**: 267 (March) 1920.

meter of the tinctures we had examined. In doing this we tried to imitate the conditions under which the patient measures out his medicine. We obtained droppers from a number of sources, and dropped the tincture in the usual way. Some variations were found in different droppers, probably due to small differences in the diameters of the tips. Considerable variation occurred, depending on the position of the dropper; when it was held vertically there were more drops per cubic centimeter than when it was held obliquely (at an angle of about 30 degrees with the horizontal). There was a noticeable difference in the number of drops per cubic centimeter, depending on the rate of flow; when the fluid was dropped in about fifteen seconds, there were fewer drops than when about forty seconds was consumed. In spite of the fact that drops and minims (16 minims in 1 cubic centimeter) are not synonymous, a good many physicians still prescribe tincture of digitalis in drop doses when they intend to give minims. For a tincture containing as many as 65 drops per cubic centimeter, this is obviously ridiculous. It would be much better if we could avoid all reference to drops in connection with digitalis administration. A valuable means of accomplishing this would be to have droppers

TABLE 2.—*Size of Drops and Use of Droppers*

Preparation	Number of Drops per C.c. When Dropped in About 40 Seconds; Dropper Held Vertically	Obliquely	When Dropped in About 15 Seconds; Dropper Held Vertically
Tincture of Digitalis:			
1. Squibb's	65	47	50
2. Squibb's fat free	57	43	40
3. Parke Davis & Co.	63	40	51
4. Wyeth's	54	40	46
5. Digitol, H. K. Mulford	51	38	38
6. Burroughs Wellcome Company	52	41	38
7. Norwich Pharmacal Company	54	41	35
8. Huntington Avenue Pharmacy	64	43	39
9. Digalen	38	26	31
Tincture of strophanthus	62	46	49
Tap water	26	17	24
95 per cent. alcohol	60	48	45

marked in 1 c.c. and 0.5 c.c. amounts. If these were available, physicians could prescribe digitalis in such doses, and patients would have an accurate and ready method of measuring the drug. In Table 2 we show the results obtained with the various preparations. The corresponding figures for tap water and 95 per cent. alcohol are included for comparison.

CONCLUSIONS

1. The potency of a group of the more common digitalis and strophanthus preparations has been examined by the cat method.

2. The results show that there has been considerable improvement in the strength of the digitalis that is available to the average patient. Tinctures, leaves in pill form, and some liquid preparations of digitalis and strophanthus in ampules were found to approximate fairly closely the expected standards; that is, the minimal lethal dose per kilogram (cat unit) is 1 c.c. of tincture of digitalis, 0.1 gm. of the powdered digitalis leaf, 0.1 mg. of crystalline strophanthin, and 0.3 mg. of digitoxin.

3. Too great emphasis cannot be placed on the importance of avoiding the use of drops in prescribing tincture of digitalis. A readily available means of measuring cubic centimeter and five-tenths cubic centimeter amounts would be of distinct value.

THE PROTECTION AND DEVELOPMENT OF HEALTH IN BOARDING SCHOOLS

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While I was responsible for the protection of the health of the student body (5,421) at Cornell University at Ithaca, N. Y., during the college year 1919-1920, these observations were made:

Of the total number of days of student time possible for the entire student body, 1.6 per cent. of days were lost during the college year on account of sickness. The loss by the women students was 2.4 per cent. of their possible total days, the loss by the men being 1.5 per cent. Of the total cases of sickness recorded, numbering 8,329, 52 per cent. were due to sicknesses which fall properly within the designation of preventable diseases; that is, acute respiratory infections, acute infectious diseases, infections and communicable diseases of the skin, and disturbances due to errors of diet or in the use of foods. Of the total cases of sickness, 21 per cent. were due to respiratory affections, 7.7 per cent. due to other acute infections, 10 per cent. due to skin affections, 22 per cent. due to digestive disturbances, and 16.6 per cent. due to external causes.[1]

It is to be expected that the extent of sickness among boys in boarding schools similarly separated from large urban communities will exceed that found among the older group represented among college students, and this chiefly because the schoolboys have not the acquired or natural resistance or immunity to diseases due to respiratory tract infections which more mature persons have, and further because schoolboys cannot as safely as college men and women be released from what may be best described as maternal care and supervision in matters of clothing, food, exercise and rest.

The records of a privately endowed boys' boarding school of the highest type with a uniform enrolment of 400 boys between the ages of 12 and 18 were put at my disposal while I was studying health supervision at this school. From these it appeared that over a period of three years (1919-1922), an average of 3.55 per cent. of all possible days of school attendance were lost on account of sickness: 1919-1920, 4.26 per cent.; 1920-1921, 3.15 per cent., and 1921-1922, 3.24 per cent., and further, that of all the days lost, 74.5 per cent. were lost on account of infections acquired through the respiratory tract. Furthermore, there were a considerable number of days lost through indiscretions of diet and from slight indispositions, due mainly to fatigue from one cause or another and properly chargeable to the preventable group. In day schools, public or private, in cities the loss of days' attendance by schoolchildren amounts commonly to from 8 to 10 per cent. of all possible days because of sickness.

Attention to medical care during sickness naturally has preceded interest in disease prevention in schools as among children at home, but the steadily increasing appreciation of the value and practical application of our present knowledge of protective as well as curative medical services in private practice warrants at least a consistent trial of measures theoretically sound, and certainly more likely to be successful in a controlled school group in the country than among day pupils of city communities. The following program of inquiry and medical administration is offered in the hope that boarding schools for girls, as well as those for boys,

1. Emerson, Haven, and others: Education in Health at Cornell University, 1919-1920, Am. J. Pub. Health **11**: 309 (April) 1921.

will develop a more alert consciousness of the value of health of body while they advance in the realm of character development and training of the intelligence.

THE OBJECTIVES

The objectives to be attained by health supervision of a boarding school are:

(*a*) Normal physical growth, as shown by height and weight for age, and performance in standard noncompetitive physical tests, including posture.

(*b*) Normal mental growth, as indicated by intelligence tests, and psychic development and behavior, as shown by response to the usual social or community situations and reactions to school discipline and responsibilities.

(*c*) The nearest practicable approach to regular and constant attendance at required school duties, or, in other words, the lowest possible noneffective rate.

(*d*) Understanding and practice of the simple necessary habits of personal hygiene of body and mind, as observed in daily school routine and disclosed at individual conferences between the pupils and the school physician.

(*e*) Correction of such physical defects as interfere with the progress of physical or mental development, or are likely to increase the hazard of infection to others.

(*f*) Prevention of diseases or conditions known to be preventable, particularly the communicable diseases, digestive disturbances and errors of nutrition.

(*g*) Abbreviation of the course of sickness and necessary convalescent periods by early report of symptoms and prompt hospitalization.

ELEMENTS IN A SURVEY

While physical environment rarely adds materially to the liabilities of a child at boarding school, heredity and personal contacts and performance being the chief hazards of youth, certain features of the school setting and equipment should be studied to be assured that there are no neglects in this factor of health.

A study of school sanitation will deal with the physical features generally grouped under location, housing, water and food supplies and disposal of wastes.

Location may well include the consideration of convenience in control of contact between the pupils and the adjacent population groups under certain contingencies. Here also we may deal with topography, soil, drainage, climate, flora and fauna.

Housing includes observations of the facilities for sleeping, eating, study, indoor assembly, recreation and religious observances. Limitation of floor and air space, separation of beds, etc., are items of special importance. Ventilation, that is, the amount, movement, temperature, humidity and facilities for change of air by permitting flushing of rooms with air direct through open windows, requires attention.

The adequacy and sanitary safety of water and milk supplies are readily determined by direct observation and the use of simple laboratory tests.

Food supply comes within the scope of sanitary studies in the matter of quality, and facilities for storage.

Sewage disposal, removal of kitchen and household waste and the general cleanliness of buildings and grounds may require attention in the interest of health of the school community.

It is obvious from a study of the modern and well managed country boarding schools that the causes, direct or contributing, of preventable diseases in a school community are rarely to be sought among errors of physical environment; nor is it at all likely that improvements in the convenience or luxury of school plants can generally be relied on to reduce such sickness as commonly occurs each year among pupils or teachers.

Under the heading of hygiene are properly included all the personal elements contributing to healthy life. Only by observation of the activities of the school population from rising bell to bed time, and the period of sleep as well, can the assets and liabilities of the school regimen be reasonably measured.

Common errors consist in the opportunities for delay and exposure during bathing and dressing; lack of brief setting-up exercises before breakfast; interference with opportunities for regular bowel evacuation before or after breakfast; insufficient time for quiet eating; eating between meals; insufficient clothing outdoors in cold, windy and wet weather; excessive exercise and zeal in athletic competition for those underweight for height and age; the urging of rapidly growing children to keep up with the grade or groups when they need gentle restraint and freedom from pressure for a period, and lack of careful distinction among the pupils with fundamental differences in personality and in their mental and emotional capacities.

A PLAN FOR HEALTH PROTECTION

A plan for health protection would include:

(*a*) A complete health examination of each pupil on admission to school, including functional test of heart, examination of nose, throat, eyes and ears, and mental test. This to include record of communicable disease of each pupil, and the Schick test or record of negative test by a physician of the family.

(*b*) Monthly record of weight and height of all except those 10 per cent. or more underweight for height and age, whose record should be made and studied weekly. The chief resources for correction of errors discovered through study of such records will be found to be limitation of competitive athletics in the underweight group and the provision of extra rest, sufficient protection by clothing outdoors and the judicious selection of suitable supplementary diet. The occasional instance of the overweight child can be readily corrected by adjustment of physical expenditure and food intake.

(*c*) Quarterly conferences with the health physician, preferably personal and individual, to consider the success or failure of the pupil in understanding and applying the rules of healthy living, and the results. It is to be understood that this is merely the particular and personal application of instruction in hygiene required to fix the application of systematic class instruction in hygiene in the mind and daily practices of the individual pupil. An essential element and foundation for any program or service for health protection is the teaching of applied personal hygiene as a part of the school curriculum for each grade. This is to be built on the teaching of the biologic sciences. It may well be that the health physician of the school will be the teacher in the classrooms of the subject of hygiene as well as the health officer of the school community.

(*d*) Daily morning observation of every pupil by some competent person who knows how each one ought to look in health (as at the breakfast table), and reference to the health physician of any one showing evidence of cold, red eyes, sore throat, rash, constipation or lack of sleep.

(*e*) Daily inspection of the entire school by the health physician for two weeks after holidays, or of individuals after absence from school for over night at any time.

(*f*) Bed care at onset of any cold or cough, or acute febrile episode.

(*g*) Isolation, from contact with pupils, of any teachers, cooks or dining-room help with colds, coughs or fever, and inquiry as to past history of typhoid fever and chronic coughs and colds, and sore throats among all who come in contact in classrooms or food service with pupils.

(*h*) Insistence on practice of washing hands before eating and after use of the toilet.

(*i*) Functional examination of heart, and measurement of weight and height of any pupil on discharge from infirmary or home sick-care after any fever or infection.

(*j*) Records of height and weight, posture and incidence of sickness tabulated for comparison by age, grade or competitive group.

THE SCHOOL HEALTH PHYSICIAN

It is believed that the protection of health of pupils is an obligation assumed by the school when it accepts them for residence or school attendance. It requires quite as much, if not more, skill on the part of a physician to detect the early incidence of preventable causes or evidences of sickness as to diagnose and treat already declared serious illnesses. The resident or attending school physician who heads the medical services should be primarily responsible for the health protection and development of the pupils, and should know when to call experts in diagnosis and treatment if sickness demands care he feels he himself is not competent to give. The school health physician, like those engaged entirely in the practice of curative medicine, needs for his development the spur of competition and contact among physicians devoted to the same kind of service. This can best be provided through association among school physicians, preferably with the existing organization of physicians directing medical services in the universities and colleges of the country.

It is quite possible that schools providing adequately for diagnosis and treatment of sick pupils by their own or other physicians, on their own or other premises under hospital conditions, will in some instances require the addition to their staff on full or part time of a physician charged primarily with health protection and perhaps trained in the preventive features of pediatrics or, at least, well informed in control of respiratory tract infections, the disorders of nutrition and the problems of mental health of children. The school health physician should be a member of the school faculty and attend its meetings.

COMPETITION IN HEALTH

If the conditions and numbers of the school population permit, intrascholastic or even interscholastic competition in health might become a matter of vivid interest to the pupils and their teachers on some such basis as the following:

It is suggested that competition in health be instituted by dividing the school into two clubs as the basis of measuring these three factors:

(1) The group effective rate: that is, the percentage of possible days' attendance attained during the school year by each of the clubs.

(2) The percentage of each club membership which has attained normal weight and height development for the age of its respective members.

(3) The percentage of each club which has acquired the habit of correct posture, this to be based on observations of posture, joint motion and muscular control judged by the medical officer of the school.

To have succeeded in winning a cherished prize for scholarship or to have figured for a season as the best competitive athlete of the school will prove but temporary honors if, at the same time, the school leaders have not acquired such understanding of the rules of hygiene and of the requirements of normal growth and bodily function that they can make use of their excellences with confidence in continued health for their future.

For the interest and support of the school principals and the school health physicians, and for the sake of gradual improvement in sanitation and hygiene at boarding schools, it would be well to provide for an annual inspection of the school and its year's record of performance by a representative of a university medical school, who might serve as consultant in matters of policy and one of a group of referees in the interscholastic health competition proposed.

RESEARCH IN SCHOOL HEALTH

Whenever a controllable group of individuals comes under continuous hygienic and medical supervision, opportunities are constantly arising for contributing to the sum of human knowledge in the field of preventive medicine. A number of topics suggest themselves for study by school physicians, and it would appear that enough accurate observations have already been made to justify publication of the experience of several schools for the benefit of other similar school groups. It is suggested that valuable contributions from the experience of schools could be made: (*a*) to the subject of school hygiene in the field of height and weight standards for pupils of such race stocks as are represented in the school parentage; (*b*) in the incidence of tuberculous infection among the boys of the school by the simple Pirquet intradermal test; (*c*) by further annual analysis of the susceptibility to and immunity against diphtheria among the children entering the schools; (*d*) in the distribution of respiratory tract affections according to the age group and nutritional level of the boys, and (*e*) in the seasonal incidence of preventable sicknesses analyzed by weeks and the ages of the different school groups.

Until schools have received at least as careful modern scientific protective medical attention as was provided for enlisted men in military service, or health service of as thorough-going quality as is given to various custodial and other public institutions, we shall not know to what considerable extent we are failing to save our boarding school children from avoidable and often permanent damage now too often resulting from infection of the respiratory tract and interference with growth.

437 West Fifty-Ninth Street.

Communicable Diseases and Travel.—Uniform provisions governing the travel of persons suffering from contagious diseases are now in force over a large part of the United States. The U. S. Public Health Service, in a bulletin just issued, says that twenty states (Alabama, Florida, Georgia, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Mississippi, New Hampshire, North Dakota, South Carolina, Tennessee, Virginia, West Virginia, Washington and Wisconsin) have adopted the standard railway sanitary code approved by the conference of the state and provincial health authorities of North America, and later by the U. S. Public Health Service in conference with the health officers of the United States. The code looks to either the prevention of travel by infected persons or to taking measures to render such travel harmless; to the adoption of such general provisions as may render unlikely the transfer of infection to travelers by towels, drinking cups and other objects of general use, and to the control of food and water on trains so as to protect them from infected persons. Prevention of all travel by infected persons is impracticable. There are sometimes good reasons why infected persons should travel; for instance, it may be advisable to take home to its parents a child suffering from measles, both for its own sake and for the sake of children whom it is visiting. If no provision is made for such patients, they may travel secretly and without safeguards.

Clinical Notes, Suggestions, and New Instruments

A ROCKING-SHOE *

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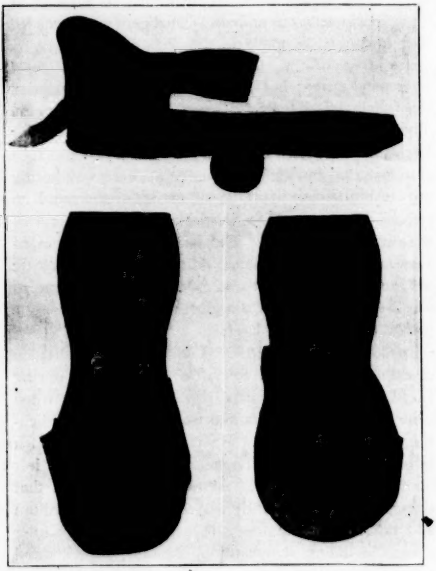
Past Assistant Surgeon (R.), U. S. Public Health Service

A rocking-shoe is a simple appliance that may be used successfully by the patient himself for mechanotherapy. It is suitable for cases in which there is a partial loss of function in the ankle or leg, resulting from various conditions that tend to weaken or to limit the ankle movements, such as foot drop, partial atrophy from disuse or nerve injury, partial ankylosis, contractures of tendons or muscles, stiffness following a sprain, contusion or dislocation, fractures into or about the ankle joint, or a recovering arthritis.



Rocking-shoe as seen from above, from below and from the side.

The rocking-shoe consists of a flat, rigid board, which is shaped like the sole of a shoe. Attached across the under surface, half way between the heel and the toe, is a cylindric piece of hard wood which acts as a fulcrum or rocker for plantar and dorsal flexion exercise. When the foot movements of inversion and eversion are required, the cylindric piece of wood should be of smaller gage and placed in a vertical position on the under surface of the sole, in order that the rocking motion may be side to side instead of to and fro. In order to adjust the rocking-shoe to the foot and to keep it from slipping, there is tacked around the heel of the wooden sole a leather or canvas counter with a strap and buckle that fastens about the ankle and that gives the apparatus the appearance of a slipper.

The patient is instructed in the use of the rocking-shoe. Graduated exercises are prescribed, the frequency and the time being increased daily. After a brief period, especially when the patient cooperates conscientiously, a marked improvement in functioning power results, much greater than is usually accomplished in an up-to-date physiotherapy department.

The advantageous features are that (1) on account of the simplicity of the rocking-shoe, it can be easily made without any elaborate tools or supplies; (2) the patient can use it without the aid of an assistant or masseur, and (3) it takes the place of complicated mechanical devices, and gives satisfactory results.

4141 Clarendon Avenue.

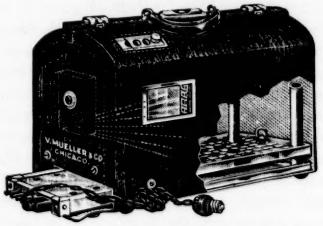
* From U. S. Marine Hospital No. 5.

HEATED BED FOR TRANSPORTATION OF PREMATURE INFANTS

JULIUS H. HESS, M.D., CHICAGO

This electrically heated bag is constructed to meet conditions encountered in the home and in transporting premature infants from distant points by train or automobile. It is designed as a part of the obstetric department equipment for general and special hospitals or other institutions likely to be called on for the temporary care of premature infants.

The hand bag is of leather and steel construction, 19½ inches long, 9½ inches wide and 15 inches deep. It is divided into two compartments, the lower containing electric heating units, and the upper the crib. It is ventilated through the top by means of an adjustable slide. Observation of the infant is made possible through a glass window in the front of the bag, and a thermometer is fastened on the inside at the window in such a position that it may be easily read from without. The bag is electrically lighted, the light being controlled by a push button on the end of the bag.



Heated bed for transportation of premature infants.

There are two heating units. The first is so constructed that it may be operated on any one of three voltages—110, for ordinary city lighting, 64 and 32, for railroad travel (the voltages used in train lighting). The second unit is designed for transportation by automobile, the plug being inserted into the lamp socket on the instrument board. To secure an equal distribution of heat throughout the bag, the false bottom is thoroughly perforated and a 1 inch tube is inserted at each corner of the false bottom and rises to the top of the bag. The heat thus reaches the mattress from below, and at the same time the upper part of the bag is warmed by radiation. The heating unit was designed by the Russell Electric Company.

Clothing and blankets used for dressing the infant during transportation should be made from heavy woolen materials.

Ordinance Requiring Health Certificates of Persons Working in Food Establishments Upheld.—In a habeas corpus proceeding the Court of Criminal Appeals of Texas has held valid an ordinance of the city of Dallas requiring of any person who works in a food establishment a health certificate showing that such person has been examined by a reputable physician and found free from any communicable disease. The ordinance made proprietors of food establishments subject to the medical examination, and the person who sought the writ of habeas corpus was the proprietor of a meat market who had been convicted for having worked in the establishment without having a health certificate.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 5, 1923

THE INTRACARDIAC INJECTION OF EPINEPHRIN

The powerful pharmacologic effects of epinephrin have been a matter of interest to the medical profession since this active principle of the suprarenal gland was isolated by Abel, Takamine and Aldrich in the period from 1901 to 1903. Credit is given to Shäfer and Oliver for having first shown, in 1895, the power of the medullary substance of the suprarenal to raise the blood pressure. Recently, considerable publicity has been given to the power of the drug, when injected into the heart, to produce a response resulting in revivification when the heart has apparently ceased its action from certain causes. According to Bodon,[1] medical officer of the United States legation in Budapest, who recently has reviewed the development of this use of epinephrin, the drug seems to have been first recommended for this purpose by Winter in 1905, although Latzko stated that he had attempted intracardiac injection on a human being as early as 1904. In 1910, Läwen and Sievers of the Trendelenburg clinic reported extensive experiments on the use of intracardiac injections of both strophanthin and epinephrin in the hearts of animals which had been caused to stop beating by temporary ligation of the circulation in the aorta and pulmonary artery. When epinephrin was injected there was a contraction of the inner zone of the parietes of the heart, which resulted in a stronger systolic contraction and a rise of blood pressure even in cases in which the vessels of the greater circulation had been replaced by rigid tubes. In other experiments, epinephrin was injected in the left ventricle immediately after loosening of the ligature of the artery, and the results were satisfactory. In another group the investigators waited until they had convinced themselves that artificial respiration with oxygen and massage of the heart were quite useless before administering the drug. In this group the results were less satisfactory, but in many instances resulted in complete restoration of the heart action.

1. Bodon, Carl: The Intracardiac Injection of Adrenalin, Lancet 1: 586 (March 24) 1923.

In 1915, Gunn showed that a heart which has ceased to beat may often be revived by epinephrin, and Szubinsky applied the method in three cases on the battle field, giving from 30 to 40 c.c. of an 0.8 per cent. salt solution with digitalis, and from 10 to 15 drops of epinephrin divided into three doses. All three patients subsequently died of conditions which at necropsy were shown to be due to the war injuries they had suffered, but temporary improvement was observed in all three, in one case lasting ten hours, with a transitory return of consciousness.

In the following year, as reported by Bodon, Ruediger revived a woman who was moribund as a result of mitral regurgitation with stenosis, by giving her an intracardiac injection of strophanthin. As a result of his experiments on animals, Ruediger recommended that injections be made in the second left intercostal space close to the sternum, sometimes in the third intercostal space; but Dörner, in 1917, recommended the fourth left intercostal space close to the sternum. The latter reported that a patient, apparently dead for twenty minutes, revived for a transitory period. In a case reported by Volkmann in 1917, there was hardly any respiration, no patellar or corneal reflex, and no pulsation in the arteries, but occasional weak beats of the heart were heard. The intracardiac injection of 1 mg. of epinephrin diluted with 20 c.c. of physiologic sodium chlorid solution was given, and after the third injection sensation and consciousness returned, but the patient died two hours later.

In 1919, as reported by Bodon, van den Velden reported the results in forty-five cases treated during twelve years. He resorted to the method only when collapse was so far advanced that intravenous medication seemed impossible. He used the fourth or fifth intercostal space, two finger breadths from the left border of the sternum. At necropsy he found that the needle most frequently passed into the myocardium and not into the cavity. He used many stimulating drugs, including strophanthin, digitalis, camphorated oil, caffein and epinephrin. In one third of his cases the immediate results were astounding, and the best results occurred in cases due to disease of the heart. In no instance, however, did any of the patients live longer than eight hours.

Later, Hesse, Zuntz, Henschen and Heydloff used this method in a variety of cases with remarkable results in some instances, each of them reporting at least one case as a cure. The most remarkable case is that reported by Guthmann in 1921 as a part of a series of five cases from the clinic for women in Erlangen. Collapse occurred during an examination for extrauterine pregnancy. Camphor and epinephrin were injected intravenously; artificial respiration and drug stimulation of the heart were resorted to, but without result. After six minutes, an intracardiac injection was given, the heart at that time being absolutely

quiescent. In ten seconds the heart sounds became perceptible, in two minutes the corneal reflex reappeared, and after eleven minutes the patient made her first respiratory movement. Four weeks later she was discharged from the clinic as well.

Bodon summarizes in his report more than ninety cases in which this method had been resorted to prior to the present year. Lasting results were obtained in twenty-four cases, including one case in Bodon's own practice which he reports in great detail. As a result of his study, he is convinced that it is not necessary or advisable to give more than 1 mg. of epinephrin or 1 c.c. of a 1:1,000 solution of the drug, in view of the possible danger of producing tetanic contraction of the muscle with systolic beating of the heart. The solution should be fresh and potent. The necessary instruments are a good syringe and a thin needle 8 cm. in length. The site of puncture should, of course, vary with the form and size of the chest and heart of the patient; but, in general, in order to reach the left ventricle, puncture should be made in the fourth or fifth intercostal space, one finger breadth inward from the left border of the relative heart dulness. As the needle arrives at the heart muscle, a slight pendulum movement is felt, and then a harder resistance as the muscle contracts from the irritation of the penetrating needle. When the needle arrives in the ventricle, blood appears. To reach the right ventricle, penetration is made in the right intercostal space on the upper rim of the fifth rib close to the sternal border. The needle passes in sagittally and is directed slightly inward. Bodon strongly recommends adherence to the fourth intercostal space on the left sternal border because the heart, lying in this region quite close to the walls of the chest, is technically easy to approach, and the dangerous areas are avoided with certainty. The chief effect to be obtained is the local stimulating action on the heart. The method is not to be used in hopeless cases, for instance, cachexia from cancer or tuberculosis, but its great value is in collapse resulting from embolism from the coronary artery, valvular trouble, toxic paralysis of the heart and similar conditions. Bodon says, "In every case where we know that the patient could have lived if some fatal state had not developed; in every case where we are induced to inject caffein, camphor or the like, it is our duty, whenever intravenous injections prove unsuccessful, and life is dwindling away, to have recourse to intracardiac injections of epinephrin." Bodon is careful, however, to indicate the limitations of the method, the psychology of its use, the necessity for explaining its limitations and value to the family of the patient, and the desirability that it be not resorted to until the patient is moribund, but not so late in that period as to be useless. Finally, he recommends that the method be made more widely known and that physicians learn it as a part of their training so that they may perform the procedure swiftly and satisfactorily.

It is the nature of man to be attracted by these methods, for they are sensational and striking. But essentially it must be remembered that the instances in which such restoration can be utilized are rare indeed. When death comes as the result of the wearing away of tissues; as the result of toxic action by overwhelming doses of either bacterial or metallic poisons, as the result of destruction of masses of vital organs, it would be cruel and futile to arouse false hopes by what could only be a sensational experiment. Epinephrin will cause contractions in a heart even after it has been removed many hours from the body in which it rested; but that is a far different matter than the restoration of life when that intangible thing known as the spirit has passed away. It is all a matter of the definition of the border between life and death. With a proper knowledge of human pathology, physicians may in rare instances find the procedure to be life saving rather than life restoring.

PHYSIOLOGIC ADJUSTMENTS ATTENDING MUSCULAR WORK

In order to secure an environment for the bodily tissues as nearly constant as is physiologically possible, profound and rapid adjustments are frequently necessary. Through changes in activity, new demands are promptly made for energy, on the one hand, and for withdrawal of products of metabolism, on the other. The process of absorption from the alimentary tract pours new material for distribution into the organism. Respiration also is regularly instituting alterations in the gaseous make-up of the circulating mediums. In the midst of this whirl of changes and exchanges, the cellular tissues might easily suffer serious deterioration if some device were not available whereby the internal environment tends to be kept fairly constant for each part of the body.

Every one interested in the human mechanism knows that muscular activity is attended by easily noted responses in certain of the physiologic functions. The pulse rate is quickened, respiration is augmented in one way or another, and heat tends to accumulate in the organism until it is promptly removed. Vasomotor changes occur so that more blood goes to the active contractile tissues and more to the skin when the temperature rises. In some cases at least, a more rapid beat of the heart appears to be an effort of compensation for fall of blood pressure due to dilatation of the blood vessels in certain parts.

Under conditions of work, the expenditure of energy and corresponding transformation of matter may readily be increased within a few hours of vigorous muscular activity to twice the calory exchange of the resting person. This may mean an additional metabolism involving 2,500 calories or more within the working period; for persons at hard work not infrequently have an energy transformation amounting to 6,000

calories a day. In order that the regulatory devices may be adequate under the great changes thus involved, efficient adjustments are essential. What they may actually mean, so far as the possibilities of aeration of the blood in the lungs are concerned, has been ascertained through direct measurement on man by Douglas and Haldane[1] at Oxford. During rest, from 5 to 8 liters (quarts) of blood passed through the lungs in different men, and during the hardest work the estimated flow was about 24 liters a minute. The blood output per heart beat in the man of average weight is about 120 c.c. (4 ounces); this frequently remains unchanged during even severe exertion. The outcome of such unique adjustments is unquestionably most favorable to the individual. The English investigators have further pointed out that various now available facts are consistent with the view that the rate of blood flow through different tissues is so regulated, as a rule, that the pressure of oxygen and the reaction, that is, the hydrogen ion concentration, remain approximately constant around the tissue elements in each tissue. When the physician prescribes physical exercise to a patient, he is calling the regulatory devices as well as the contractile cells into action, though he may fail to appreciate this. It is well for him to know the magnitude of the efforts which such exercise sometimes involves.

1. Douglas, C. G., and Haldane, J. S.: The Regulation of the General Circulation Rate in Man, J. Physiol. 56:69 (Feb.) 1922.

SUICIDE STATISTICS

It is generally accepted that the struggle to live is instinctive and inherent in all living things, and that the primordial urge to maintain life is the fundamental factor in determining evolution. Suicide is therefore one of the most puzzling of mysteries, for it seems to subvert the most primitive of all cravings. As it occurs only in man, there is reason to seek the explanation in that factor which seems almost peculiar to man: his mind. Many, indeed, see in suicide only the evidence of a mind diseased. But this explanation does not suffice. Mental disease introduces no new instincts; it merely exaggerates old tendencies by removing controls and inhibitions that would keep them in check. Other psychologists have gone to the opposite extreme and suggest that the number of suicides may even be a measure of the degree of national culture. The really essential element of mind that permits the choice of death instead of life is undoubtedly foresight and anticipation, occasionally the imaginings of insanity but more often the judgment of the actual facts.

A study of the statistics reveals glimpses of the numerous factors that enter into the formation of such judgments. The suicide rates for each hundred thousand of population for these last few years of kaleidoscopic changes are: five-year average, 1911 to 1915, 16.3; 1916, 14.2; 1917, 13.4; 1918, 12.2; 1919, 11.2, and 1920, 10.2. The figures from the United States Census Bureau for the registration area (approximately 82 per cent. of the total population) are not available for 1921 and 1922. But the Save a Life League reports the absolute numbers for those years in the whole country as over 20,000 and 13,530. These would mean a rate of about 20 and 13, respectively.

In a recent monograph, Weichbrodt[1] has analyzed European figures and discussed some interesting factors. He points out the increase in the proportion of women who commit suicide that has come simultaneously with their assumption of more active responsibility. In the United States the ratio of men to women suicides has changed from 3.3:1 in 1916, to 2.7:1 in 1920. Comparative studies of the suicide rates among Catholics, Protestants and Jews lead to the conclusion that devoutness, and not the particular form of faith, is the important element. Bratz,[2] presumably using the same figures, stresses the increasing tendency to individualism, with consequent loss of family and community ties, as an important contributing factor.

Recently there has been discussion of the supposedly greater frequency of suicide among physicians than among other professional classes. The figures compiled by THE JOURNAL from its records for the years 1916 to 1922 are: 39, 31, 39, 38, 32, 69 and 56. The approximate number of physicians during this period is from 158,000 to 160,000. Unfortunately, there are no figures available of other professions that would permit an actual comparison. But when it is realized that suicide is considerably more frequent among brain workers than among hand workers, there is little reason to assume that there is anything in the practice of medicine that conduces to suicide. The relation to employment already quoted suggests that it is lack of work and not overwork that most often leads to suicide. The rise in 1921 is entirely in accord with the general increase of suicide throughout the country.

1. Weichbrodt, R.: Der Selbstmord, Monatschr. f. Psychiat. u. Neurol., 1923, Supp. 22.
2. This article is abstracted in the Berlin Letter in this issue.

Evolution.—Among the resolutions adopted by the council of the American Association for the Advancement of Science at its recent meeting in Boston were the following which pertain to the question of evolution: (1) The council of the association affirms that, so far as the scientific evidences of the evolution of plants and animals and man are concerned, there is no ground whatever for the assertion that these evidences constitute a "mere guess." No scientific generalization is more strongly supported by thoroughly tested evidences than is that of organic evolution. (2) The council of the association affirms that the evidences in favor of the evolution of man are sufficient to convince every scientist of note in the world, and that these evidences are increasing in number and importance every year. (3) The council of the association also affirms that the theory of evolution is one of the most potent of the great influences for good that have thus far entered into human experience; it has promoted the progress of knowledge; it has fostered unprejudiced inquiry, and it has served as an invaluable aid in humanity's search for truth in many fields.

Current Comment

BORAX AS A FOOD PRESERVATIVE

A medical officer of a London suburb recently reported that some sponge-cake sold in a local bakery had been found to contain more than 35 grains of boric acid to each pound of cake. Investigation showed that the source of the boric acid was the liquid eggs (that is, egg-yolk and albumin, without the shells) shipped from China and reconstituted in England, used in the manufacture of the sponge-cake. The liquid-egg trade in England is said to amount to nearly $10,000,000 annually. Practically no liquid-egg yolk containing boric acid comes into the United States except such as is to be used for technical purposes, such as the tanning of leather. In such instances the federal authorities require the material to be so denatured that it cannot possibly be used for food purposes or the officials demand definite proof that it will be used only for technical purposes. Liquid egg containing boric acid is refused entry into the United States on the ground that it is adulterated within the meaning of the Food and Drugs Act. The case reported from London well illustrates what happens when the bars are let down to chemical preservatives.

TREND OF THE WASSERMANN TEST

When the Wassermann test was first introduced, positive reactions were reported to have occurred in tuberculosis, scarlet fever, malaria and various other diseases. Some writers reported more than 30 per cent. of positive reactions among tuberculous patients. It is well known today that such results were erroneous; syphilis and tuberculosis exist in the same person in many instances, but the doctrine that tuberculosis alone will cause a positive Wassermann reaction is no longer held by any serologist. There is now enough evidence, it seems, to discard scarlet fever also from the Wassermann list. Hecht, Lateiner and Wilenko examined 105 cases, obtaining one positive reaction; Kolmer, in 250 cases, reported only five positive reactions, and Browning and McKenzie examined thirty-seven cases and obtained no positive reactions. Recently in THE JOURNAL, Christensen [1] reported 110 cases of scarlet fever, in fifty-eight of which a Wassermann test was made in every stage of the disease. Of these, fifty-three were negative at all times; five were positive with cholesterolized antigen in the first or second week, and negative later. Malaria has occasionally been reported as producing a positive Wassermann reaction. Craig [2] observed five cases. Thompson states that he made similar observations. The report of McConnell's [3] case throws light on this question; his was a case of estivo-autumnal malaria with no clinical evidence of syphilis. The blood smear disclosed malaria parasites, and the Wassermann reaction was strongly positive. No significance was attached to the positive Wassermann reaction, which was attributed to the malaria infection. The patient died. Necropsy revealed definite syphilitic lesions in the aorta, and involvement of the aortic leaflets. Thus, a positive Wassermann reaction supposedly due to malaria was, in fact, due to syphilis. Among 4,000 persons suffering from diseases other than syphilis, Craig obtained only twelve positive Wassermann reactions. Of the twelve, syphilis could not be entirely excluded in three, and another gave a doubtful positive reaction. It cannot be said at this time that a positive Wassermann reaction is obtained only in syphilitic infection, but the trend of recent investigation is very strongly in that direction.

1. Christensen, G. E.: The Wassermann Reaction in Scarlet Fever Patients, J. A. M. A. **80**: 1119 (April 21) 1923.
2. Craig, C. F.: The Wassermann Test, Ed. 2, St. Louis, C. V. Mosby Company, 1921, p. 178.
3. McConnell, Guthrie: Positive Wassermann Test in a Fatal Case of Estivo-Autumnal Malaria, J. A. M. A. **80**: 1123 (April 21) 1923.

TWO MORE ELECTRONIC DIAGNOSES

Some one is always taking the joy out of life. A copy of the Albuquerque, N. M., *Morning Journal* for April 18 is before us. It contains an interesting "Tale of a Guinea-Pig," occupying the greater part of a page of the paper, and written by a committee of the Bernalillo County Medical Society. This society was desirous of protecting the public, of Albuquerque in particular, from exploitation by the disciples of Albert Abrams. Because of its fame as a health resort Albuquerque has proved a fertile field for these gentry. Among those doing "electronic" stunts in Albuquerque are, it seems, one F. E. MacCracken and one Henry M. Bowers, both osteopaths. In order to lend an air of verisimilitude to an otherwise bald and unconvincing tale, the committee of the Bernalillo County Medical Society had blood specimens sent to MacCracken and Bowers from another town in that state. The specimens were supposed to be, respectively, from a hypothetical "Miss Bell" and an equally fictitious "Mrs. Jones." Actually, the specimens of blood were from a guinea-pig. The Albuquerque *Morning Journal* reproduces a letter sent to "Miss Bell" signed F. E. MacCracken and one sent to "Mrs. Jones" from Bowers. Miss Bell was told that she had "lowered resistance" which had "effected [sic!] your digestive system, the Kidneys or Renal System and the Cerebro-Spinal or Central Nervous System." "Miss Bell" also had "Digestive Sarcoma Cardiac end of the stomach 6 ohms"; this "in later stages will be noticed by Orthodox Medicine as a Cancer. But at this stage you have only 6 ohms and is in the form of an ulcer." Also "Miss Bell" had a streptococcus infection of the left frontal sinus, of both antrums, of "the Gall Bladder and the Left Tube." Could one expect a more interesting diagnosis to be made from a drop of blood, taken from a male guinea-pig? "Mrs. Jones," according to Bowers, had a "tuberculous reaction" but this "does not amount to very much." Her great trouble, according to the diagnosis, was with her "digestive reaction" and "this together with the puss [sic!] reaction, which we call streptococcus and staphylococcus is the cause of the eczema." Here again it must be recorded that the specimen of blood from which this diagnosis was made was the same guinea-pig whose sanguineous fluid was furnished MacCracken. Both Bowers and MacCracken suggested treatment. MacCracken thought that it would require "at least eight or ten weeks" to clear up "Miss Bell's" case. Bowers was "quite sure that your case would yield very nicely to our method

of treatment." All of which points to the need of some new machine from the Abrams laboratory that will be sufficiently discriminating to prevent a reaction for pus tubes from the blood of male guinea-pigs.

Association News

THE SAN FRANCISCO SESSION

Hotels at San Francisco

A list of San Francisco hotels, together with rates to be charged, was printed in THE JOURNAL, April 21. It will be seen from an examination of this list that the prices of hotel accommodations will vary from $1 to $12 a day. There need be no fear, therefore, that abundant accommodations at prices to suit all persons will not be available at San Francisco. For a number of the most prominent hotels, the rates published in THE JOURNAL will apply whether one or two persons occupy a room. In other words, a room, the cost of which is stated as $8, will in certain hotels cost no more when occupied by two persons than when occupied by one.

Phi Beta Pi Fraternity Banquet

All members of the Phi Beta Pi Fraternity who attend the annual session are urged to make reservations for the dinner to be given by that fraternity at the "Plantation" at 7 o'clock, June 28. Dr. C. M. Johnson, 1344 Third Avenue, San Francisco, will be glad to receive applications for reservations.

Week End Trips After the Annual Session

Arrangements have been made for week end trips from San Francisco to Yosemite Valley and to Del Monte for parties who wish to visit these noted resorts. The trip to Yosemite Valley has been arranged as follows: Leaving San Francisco Saturday, June 30, at 11 p. m., and returning on Tuesday, July 3, at 10:05 p. m. The expenses, including Pullman berths, meals and lodging, will be included in the charge of $59. Special parties of six each can make arrangement for this trip by automobile at the same rate. Among the main points of interest to be visited are Artist Point, Inspiration Point, Signal Peak, Wawona, Mariposa Grove of Big Trees, Chinquapin, Bridal Veil Meadows, Mono Meadows, Ostrander Rock, Glazier Point and Overhanging Rock.

The trip to Del Monte will cost $30, and will be made by automobile. Parties for this trip must include at least six persons. Leaving San Francisco, June 30, at 10 a. m., the return to San Francisco will be at 6 p. m., July 2. Del Monte is one of California's largest and most popular resorts, consisting of a vast estate of approximately 18,000 acres, and is situated on the historic Monterey Peninsula. It is located 125 miles south of San Francisco. It is stated of Del Monte that it is the one place in America where one can do everything or nothing. Golf, polo, tennis, horseback riding, swimming, fishing, hunting, sailing, dancing, idling or working are all provided for. A special postsession golf tournament is being arranged for the morning of Sunday, July 1, and there may possibly be a polo game during the afternoon of that day.

Reservations for the Yosemite trip or for the Del Monte automobile trip must be made through the American Express Company, Market and Second streets, San Francisco.

Antituberculosis Measures in Holland.—The fight against tuberculosis is carried on in an efficient manner, especially at Amsterdam. A central dispensary, in charge of a full-time physician, is charged with the arrangement of all social measures in connection with the patients. He places the patients in sanatoriums or hospitals, according to the seriousness of their sickness. Therefore, he is constantly aware of the number of unoccupied beds in the tuberculosis department of the local hospitals and in the sanatoriums of the whole country.—J. L. C. Wortman, *Modern Hospital* **20**:154 (Feb.) 1923.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Hospital News.—The Druid City Hospital, Tuscaloosa, was opened, March 26.——The contract has been let for the erection of a new $75,000 hospital at Jasper.——The Salter Hospital, Eufaula, was opened, March 22.

Virginians Study Alabama Health Methods.—Three prospective officials of the Virginia State Department of Public Health have arrived in Montgomery to study public health methods and administration in Alabama.

State Medical Meeting.—At the fifty-sixth annual session of the Medical Association of the State of Alabama, in Mobile, April 17-20, the following officers were elected for the ensuing year: president, Dr. William W. Harper, Selma; vice presidents, Drs. James M. Watkins, Troy, and Elijah M. Harris, Russellville; secretary, Dr. Henry G. Perry, Montgomery, and treasurer, Dr. Jacob U. Ray, Woodstock.

ARIZONA

University President Inaugurated.—The inauguration of Cloyd H. Marvin as president of the University of Arizona, Tucson, occurred, April 23-24. Dr. George E. de Schweinitz, President of the American Medical Association, appointed Dr. Delamere F. Harbridge of Phoenix the official delegate to represent the Association at the inaugural ceremonies.

CONNECTICUT

Hartford County Medical Society.—At the one hundred and thirty-first annual meeting of the society in Hartford, April 3, Dr. Arthur S. Brackett, Bristol, was elected president, and Dr. Anthony W. Branon, Hartford, secretary-treasurer.

Sterling Chemical Laboratory Dedicated.—The Sterling Chemical Laboratory at Yale University, New Haven, was dedicated, April 4, in the presence of the American Chemical Society, the trustees under the will of John W. Sterling, and the authorities of Yale University. George Church, New York, acting for the Sterling trustees, presented the laboratory to Yale University, and President Angell accepted it. Following his address, Dr. Angell turned the building over to Edward C. Franklin, president of the American Chemical Society, who made a speech of greeting and thanks.

FLORIDA

Personal.—Dr. Harold M. Beardall, city physician of Orlando, has resigned. He will be succeeded by Dr. Sylvan McElroy.——Drs. P. E. Watts and A. H. Weathers were elected president and secretary, respectively, of the Jacksonville Medical Society at the recent annual meeting.

IDAHO

Supreme Court Upholds Physician.—*Northwest Medicine* states that the supreme court has decided in favor of Dr. Parley R. Nelson, Rexford, who was prosecuted for failure to pay a license tax for the practice of his profession. When the physician refused to pay the tax he was fined in the police court for violation of the ordinance. The district court of Madison County reversed this action and the city of Rexford appealed to the supreme court.

Legislative News.—The last legislature passed Senate Bill 129 which provides that no person can practice any system of treating the sick without a license to perform or prescribe such service. This bill was opposed by the osteopaths, whose main argument was that it would not allow them to use the Abrams treatment. The bill which passed by a vote of 58 to 4 will go into effect May 8.——House Bill 153, exempts physicians from the necessity of obtaining an optometrist's license. The existing law states that no one can fit or adapt lenses without first having secured an optometrist's certificate ——A bill that failed to pass by a vote of 21 to 20 provided for a law corresponding to the Harrison Narcotic Law. This bill permitted physicians only to prescribe or use narcotics. The present law is unenforceable, as it conflicts with the federal law.

ILLINOIS

Physician Fined.—It is reported that federal Judge English fined Dr. Ezra Hart, Harrisburg, $500 when he pleaded guilty, April 14, to the second offense of violating the Harrison Narcotic Law.

Rabid Animals in Saline County.—Reports reaching the state department of public health state that a large number of animals, including cattle, horses, sheep and dogs, in Saline County, have recently been bitten by rabid dogs, and that one child in Galatia was bitten. Investigations to date show that dogs generally are under quarantine in the affected area. The department of health is keeping in touch with the situation.

Antimosquito Campaign.—A permanent campaign for the eradication of malaria mosquitoes is underway in Belleville. The estimated cost of the first year's work, $3,500, has been provided. The expenses will be borne jointly by the local government, the local board of trade and the International Health Board. The state department of public health will furnish a sanitary engineer to supervise the work. This campaign is a direct result of the successful campaign at Carbondale last year, which is also on a permanent basis.

Chicago

"Herb Doctor" Fined.—It is reported that Stanley Gatkowski, self-styled herb doctor, was fined $100 and costs by Municipal Judge O'Connell, April 25, for practicing medicine without a license.

Research on Respiratory Diseases.—The Metropolitan Life Insurance Company has renewed its grant of $3,000 to the department of hygiene and bacteriology of the University of Chicago, for special investigations in respiratory diseases.

INDIANA

Practitioner Fined.—Reports state that Robert J. Clark, alias Smith, Marion, pleaded guilty to a charge of practicing medicine without a license and was fined $100 and $25 costs, in the superior court, April 17.

Physicians' Licenses Revoked.—The licenses held by Drs. George W. Thain and James W. Squires, both of Fort Wayne, were revoked, April 21, by the state board of medical registration and examination, it is reported. It was alleged that the former performed an illegal operation and that the latter violated the Harrison Narcotic Law.

IOWA

Hospital News.—The new building of Sacred Heart Hospital, LeMars, erected at a cost of $300,000, was dedicated, May 6.——The Virginia Gay Memorial Hospital opened its new building for inspection, March 20.——Ground was broken, April 8, for the new home of St. Luke's Hospital, Mason City. More than 2,000 persons attended the ceremonies.

Personal.—A gift of $520 in gold was presented to Dr. Alfred L. Brooks, by his patients and friends, on his fortieth anniversary in practice in Audubon County.——Dr. Sara E. Foulks, superintendent of the Davenport Hospital, has been granted leave of absence to serve in Greece with the American Women's Hospital Association.——W. D. Hayes has been appointed commissioner of public health and director of laboratories of Sioux City.

College Affiliation.—The affiliation of Coe College of Cedar Rapids with the Nurses' Training School of the State University of Iowa Hospital, for the purpose of organizing a five-year liberal arts nursing course, has been completed. Des Moines and Drake universities have already affiliated with the training school. Students may, after a certain amount of preparatory work in these universities, now enter the nurses' training school, and, after further training there receive a certificate of registered nurse and a degree from the affiliated school.

KANSAS

Course for Health Officers.—The twelfth annual session of the Kansas School for Health Officers was held in Topeka, April 23-28, under the auspices of the secretary of the state board of health. More than 400 health officers and nurses attended.

KENTUCKY

Woman Asks Injunction Against Health Department.—A suit has been filed praying that the board of health, Lexington, be enjoined from mailing notices to the petitioner, asking her to report at a clinic for treatment and threatening her with arrest in event of default. The petitioner alleges that she went to a clinic on the advice of a nurse, to be examined for trouble in her stomach and head, and that a blood test was made without her knowledge or consent, since which time the notices complained of have been sent. She denies that she had any venereal disease.

LOUISIANA

Hospitals Dedicated.—The Shrine Hospital for Crippled Children, Shreveport, erected at a cost of $300,000, was dedicated, April 21.——The John Dibert Memorial Building at the Eye, Ear, Nose and Throat Hospital, New Orleans, was formally opened to the public, March 15.

Louisiana State Medical Society.—The forty-fourth annual convention of the state medical society was held in New Orleans, April 10-12. Dr. Lester J. Williams, Baton Rouge, was elected president; Drs. Charles V. Unsworth, New Orleans, Marvin Capelle, Alexandria, and Foster M. Johns, New Orleans, vice presidents, and Dr. Paul T. Talbot, New Orleans, secretary-treasurer (reelected).

Illegal Practitioners.—Injunctions restraining four men from practicing medicine without a license were obtained by the state board of medical examiners, April 20, in the civil court of New Orleans. H. Goldberg was alleged to have attempted to treat chronic nephritis by prescribing his Vita Nos. 1, 2 and 3. The patient died. It is reported that Edward L. DeBrueys was charged with diagnosing a case as kidney trouble and charging the patient $100, and that Vincent A. Nichols was charged with attempting to cure by the "laying on of hands." G. M. Campbell was the fourth person said to be charged with illegal practice.

MAINE

Sheppard-Towner Law Vetoed.—Governor Baxter's veto of the Sheppard-Towner Law was sustained by an overwhelming vote of the legislature, March 28, according to reports.

MARYLAND

Herter Foundation Lectures.—The fifteenth course of the lectures on the Herter Memorial Foundation of Johns Hopkins University Medical Department, Baltimore, was given by Dr. Karel F. Wenckebach, professor of medicine, University of Vienna, Austria, May 3, 4 and 5, in the amphitheater of Johns Hopkins Hospital. His subject was "The Irregular Action of the Human Heart and Its Clinical Significance."

MASSACHUSETTS

New Dean for School of Medicine.—Dr. Alexander S. Begg, professor of anatomy at Boston University School of Medicine, has been appointed dean of the school to succeed Dr. John P. Sutherland, who resigned after twenty-six years of service.

Physicians Advise on Medical Career.—The last of a series of lectures on the various professions, given to Harvard University students, was delivered by Dr. William S. Thayer, physician-in-chief of Johns Hopkins Hospital, Baltimore, April 9. The following day individual conferences were given to students by Drs. Homer Gage, Worth Hale, Frederick C. Shattuck, Alfred Worcester and Walter B. Cannon.

MICHIGAN

Personal.—Prof. Walter B. Pillsbury, on leave of absence from the University of Michigan, has been delivering a series of eighteen lectures at Montpellier, France.——Dr. Max Ballin has resigned from the public welfare commission, Detroit.——Charles Freiburger, Detroit, for four years secretary of the board of health, has been appointed secretary to Mayor Doremus.

Hospital News.—Building "E" a large two winged brick structure of the Eloise Asylum, Detroit, was completely destroyed by fire, recently. Two unidentified women were burned to death. The building housed about 250 women, most of whom were bed patients.——The new municipal tuberculosis sanatorium, to be known as Sunshine Hospital, Grand Rapids, was opened, April 4.

County Associations Affiliate.—The Ionia County Medical Society gave a complimentary dinner at Belding, April 12, to the Montcalm County Medical Society. It was decided to consolidate the activities of the two societies. The following

officers were elected: Dr. Robert H. Haskell, president; Dr. John R. Hansen, vice president, and Dr. Fred A. Johnson, secretary-treasurer. The new society will be known as the Ionia-Montcalm Medical Society.

MINNESOTA

Personal.—Dr. I. George Wiltrout was recently elected mayor of Oslo.——Dr. Robert Guilmette, Argyle, has been awarded the British War Service Medal for services rendered with the Canadian Army Medical Corps.——Dr. David A. Stewart, director of the Manitoba Sanatorium for Consumptives, Ninette, Manitoba, Canada, gave an address on "Tuberculosis: The Intestinal Phase," before the Mayo Clinic, Rochester, April 18.——Dr. Julius R. Sturre, mayor of Watkins, has been elected president of the Meeker County Medical Society, and president of the city commercial club.

MISSOURI

Banquet for Past Presidents.—The Jackson County Medical Society gave the first annual dinner in honor of its past presidents, in Kansas City, April 14. Dr. Clarence B. Francisco, presided. Dr. Nathaniel Allison, dean of the Washington University Medical School, St. Louis, spoke on "Medical Problems." The prize of $100 offered to physicians of less than ten years' experience for the best paper on original research from September, 1921, to December, 1922, was awarded to Drs. Thomas G. Orr and Russell L. Haden.

Hospital News.—The additions to the Missouri State Sanatorium, Mount Vernon, will be dedicated with appropriate ceremonies on National Hospital Day, May 12.——A new hospital will be erected in Kansas City by the Baptist Hospital Association, it is announced, at a cost of $500,000. Plans have been completed for a new $500,000 maternity hospital at the Washington University School of Medicine. The hospital will be eight stories high and will eventually have a capacity of 250 beds. It will supplant the present St. Louis Maternity Hospital, which has only thirty-three beds, and will have an affiliation with the medical school, similar to that of the St. Louis Children's Hospital, the Shriners Hospital for Crippled Children and the Barnes Hospital.

NEBRASKA

Professor Frankl to Give Course of Lectures.—Arrangements have been made for Prof. Oscar Frankl to conduct in Omaha a course of lectures on gynecology and endocrinology similar to that given by him recently in other cities. The course will be given during the week May 12-18. Those interested may communicate with Dr. D. T. Quigley, Thirty-Fourth and Farnan Streets, Omaha.

NEW HAMPSHIRE

Personal.—Dr. Edgar O. Crossman, Manchester, has been appointed director of the U. S. Veterans' Bureau for the New England district.——Dr. Harry O. Chesley, Dover, and Dr. Thomas J. Dougherty, Somersworth, have been appointed county physicians for Strafford County.

State Accepts Sheppard-Towner Measure.—The Murdock bill, which would withdraw New Hampshire from cooperation with the federal child welfare bureau, under the provision of the Sheppard-Towner Law was killed by practically a unanimous vote, April 10, in the house of representatives. The principal speaker against the act based his opposition on a "growing tendency to build up a paternalistic government at Washington, D. C., through the distribution of federal aid."

NEW JERSEY

Chiropractor Fined.—The state board of medical examiners reports that Max Nagel, chiropractor, Jersey City, was fined $200 and costs, recently, following conviction on the charge of practicing medicine without a license.

NEW YORK

Physician Sentenced.—It is reported that Dr. Simeon B. Minden was sentenced from two and one half to ten years in Sing Sing Prison, in the Bronx County Court, April 25, following conviction on a charge of manslaughter. Dr. Minden was indicted, March 29, 1921, for performing an illegal operation. The patient died. In 1905, Dr. Minden was fined $500 for violation of the patent laws, and in 1907 was fined a like amount for violation of the Harrison Narcotic Law.

Infant and Maternity Welfare.—Eighteen leading specialists in obstetrics and children's diseases serve as a board of regional consultants of the division of maternity, infancy and child hygiene of the state department of health. Since their first meeting in September, 1922, the consultants have addressed twenty-seven medical societies to explain work planned in the various districts. A demonstration nursing service of from one to four months' duration has been conducted in six communities. Since November, the division has had two consulting field nurses who spend several days in each locality to assist in maternity activities. In order to train nurses to teach maternity hygiene, an extension course has been organized in which demonstrations in various parts of the state have been held; 320 nurses enrolled for this course. A breast-feeding campaign has been opened on Long Island in cooperation with the Brooklyn Pediatric Society in which every new mother is visited by her family physician or by a nurse.

New York City

Dinner to Dr. McGrath.—Dr. John J. McGrath, who was recently appointed chairman of the Board of Bellevue and the Allied Hospitals, was the guest of honor at dinner at the Hotel Commodore, April 19. Addresses were made by Dr. George D. Stewart, Judge Otto Rosalsky, and Judge Cornelius F. Collins.

Campaign for Hospital Building.—The cornerstone of the new building of the Hospital for Joint Diseases, will be laid, May 6. Through the sale of 2,800 bronze memorial tablets at $250 each, and other methods, it is expected $700,000 will be raised. The hospital will have 275 rooms of which seventy-five will be private.

Public Health Lectures.—During 1922, the Bureau of Public Health Education of the Department of Health supplied 3,711 lectures. These were delivered to 106,594 people in industrial establishments, labor union halls, churches and public school buildings; 500 lectures were delivered in native tongues, including Arabic, French, German, Russian, Yiddish, Greek, Italian, Lithuanian, Polish, Portugese, Spanish and Assyrian. There is such demand for lecturers able to speak foreign languages that the bureau maintains a staff of speakers. While the funds provided for this work, limit lectures to the City of New York, special arrangements can be made with the division of lectures for engagements outside the city.

Distribution of United Hospital Fund.—The annual distribution of the United Hospital Fund took place at City Hall on April 26, when $550,000 was allotted to fifty-six member hospitals of the fund. This was $25,000 more than was distributed last year. Institutions in New York received $474,976.58 and those in Brooklyn, $75,023.42. Of these amounts $233,928 was allotted to eighteen general hospitals, $97,642 to institutions caring for women and children, $68,069 to twelve special hospitals, and $75,336 to institutions for chronic and convalescent cases. Among the institutions receiving the larger contributions were the following: Mount Sinai, $37,366; St. Luke's, $32,036; Montefiore Home, $45,931; Orthopedic, $23,829; New York, $22,105; Lying-In, $21,291; Presbyterian, $21,908.

NORTH CAROLINA

Personal.—Dr. Amzi J. Ellington has resigned as county health officer of Wayne County, to become effective, June 1. ——The governor has reappointed Drs. Joseph Howell Way, Waynesville, and Andrew J. Crowell, Charlotte, members of the state board of health for a six-year period.——Dr. David A. Stanton, High Point, has been appointed a member of the state board of health to fill the unexpired term of Dr. Fletcher R. Harris, Henderson, who resigned recently.

State Association News.—At the seventieth annual meeting of the Medical Society of the State of North Carolina, in Asheville, April 17-19, the following officers were elected for the ensuing year: president, Dr. Vance McGougan, Fayetteville; vice presidents, Drs. Joseph L. Spruill, Sanatorium, Eugene B. Glenn, Asheville, and David A. Garrison, Gastonia, and secretary-treasurer, Dr. Lewis B. McBrayer, Sanatorium, secretary-treasurer. Raleigh was chosen as the meeting place for the next annual convention.——Dr. Charles W. Armstrong, Salisbury, was elected president of the North Carolina Public Health Association to succeed Dr. Alexander C. Bulla, Winston-Salem, and Dr. Frank M. Register, Raleigh, was reelected secretary.——At the sixth annual meeting of the North Carolina Hospital Association in Asheville, Dr. Lester A. Crowell, Lincolnton, was elected president to succeed Dr. Eugene B. Glenn.

OHIO

Chiropractors Sentenced.—According to reports, R. A. Kauffmann, R. P. Lorey and J. W. Webb, chiropractors of Chillicothe, were found guilty of practicing medicine without a license, April 13, and fined $25 each, and costs. On their refusal to pay the fine, they were sentenced to serve two months in the county jail.

Public Health Officers Elect.—At the annual election of the Ohio Public Health Association, April 13, in Columbus, Dr. Clyde W. Kirkland, Bellaire, was elected president to succeed Dr. Clarence D. Selby, Toledo. Dr. Linsly R. Williams, head of the tuberculosis commission in France for the Rockefeller Foundation, New York, was the principal speaker. Dr. John E. Monger, state health officer, also gave an address.

Medical Science Building Under Construction.—The contract has been let for the construction of the medical science building, to be known as Hamilton Hall, at Ohio State University, Columbus. The medical school will be moved from its present downtown site to the campus proper and Hamilton Hall will be the first of the group of buildings to be devoted to the medical college. The medical science building will represent an expenditure of $270,000.

Hospital News.—The name of the Protestant Hospital, Columbus, has been officially changed to White Cross Hospital.——A prenatal clinic has been established at the Akron City Hospital, with the object of giving instruction and medical advice, covering general health conditions to prospective mothers who cannot pay for extended medical attendance. Hospitalization will be attempted in abnormal cases. This clinic will cooperate with practicing physicians in educating mothers to seek skilled medical aid.——Plans for a proposed $2,000,000 homeopathic hospital in East Cleveland collapsed, April 17, following the failure of the Cleveland Homeopathic Association and the East Cleveland Hospital Commission to agree on managerial policies.

PENNSYLVANIA

Hospital Association Conference.—The second annual conference of the Pennsylvania Hospital Association was held in Philadelphia, April 26-27. Daniel D. Test presided; Mayor Moore addressed the meeting. Elmer E. Mathews of the City Hospital, Wilkes Barre, was elected president; Dr. George M. Reese, State Hospital, Shamokin, treasurer, and John M. Smith, Hahnemann Hospital, Philadelphia, secretary.

Philadelphia

Elected to Jefferson Faculty.—The board of trustees of Jefferson Medical College, April 18, announced the election of Withrow Morse, Ph.D., of the University of West Virginia, Morgantown, to the chair of physiologic chemistry.

Fellows of the American College of Physicians.—Twenty-two Philadelphians were included in the 190 physicians admitted to fellowship in the American College of Physicians at the closing session, April 6, in Philadelphia. On account of the illness of Dr. James M. Anders, retiring president, his address was read by Dr. David Riesman.

RHODE ISLAND

Refuses Maternity Act.—The house of representatives, April 17, refused by roll call vote of 49 to 47, to pass the Peck bill, accepting the Sheppard-Towner Law.

SOUTH CAROLINA

Free Typhoid Inoculation.—A typhoid inoculation clinic was opened by the Columbia Health Department, April 9. It will continue throughout the summer. Campers and vacationists are especially urged to become immunized against typhoid fever. More than 1,000 Columbians took advantage of the free service last year.

TENNESSEE

Rotary Society for Crippled Children.—Delegates from various rotary clubs met in Nashville, April 10, and organized the Tennessee Rotary Society for Crippled Children. The following other state societies have been formed: California, Illinois, Kentucky, Michigan, New Jersey, New York, Pennsylvania, West Virginia, and Ontario, Canada. Clinics for crippled children were held at the Vanderbilt Hospital, Nashville, through the courtesy of the state medical association. The crippled children movement in connection with Rotary was organized in 1919 in Ohio.

TEXAS

Hospital News.—The city commission has adopted the plans for the new $50,000 municipal hospital to be erected at Ennis.——Ground was broken in April for the new buildings for the Potter County Hospital, Amarillo, to be erected at a cost of $250,000.——The new $85,000 addition to the Central Texas Baptist Sanatorium, Waco, was formally opened to the public, March 29.

VIRGINIA

Chiropractors Fined.—According to reports, Bristow & Bristow, W. H. McChesney, and Fannie C. Bristow, chiropractors of Norfolk, were fined $25 and costs recently for practicing medicine without a license.

State Health Association Election.—At the annual meeting of the Virginia State Public Health Association in Richmond, April 17, Dr. Powhatan S. Scheneck was elected president; Dr. Roy K. Flannagan, first vice president; Dr. Charles Keister, second vice president, and Dr. Lonsdal J. Roper, secretary-treasurer.

WASHINGTON

Personal.—Dr. Wilfred Grenfell, of Labrador, gave an address at the annual banquet of the King County Medical Society, Seattle, March 24. —— Dr. David Livingstone addressed the Pierce County Medical Society at Tacoma, April 24, on the "Early History of Insanity in the Northwest."——Dr. Herbert E. Coe, Seattle, has been appointed director of the state department of child hygiene.

WISCONSIN

Physicians Refuse to Sign Death Certificate.—Every physician in Cadott refused to sign the death certificate of Sandford Richard, who died, April 4, while under the care of L. E. Laramy, local chiropractor. It was necessary for the coroner to perform a necropsy. Richard had died of hemorrhage of the lungs.

CANADA

Association News.—The summer school of the British Columbia Medical Association will be held in July this year immediately following the Annual Session of the American Medical Association in San Francisco. It is hoped that prominent physicians from the eastern and midwestern states who will be passing through Vancouver on their way to or from California, will visit the school.——The St. John (N. B.) Medical Society, which has been discontinued since the World War, was reorganized at a recent meeting.

University News.—A course in public health nursing will be established at Dalhousie University, Halifax, in cooperation with the provincial department of health, the Nova Scotia Red Cross, the Victorian Order of Nurses and the Massachusetts-Halifax Health Commission.——Pending the completion of the new health center under construction at Dalhousie University, the fifth year medical students have special clinics in certain city institutions.——All students entering McGill University, Montreal, to study medicine after September, 1923, will pursue a seven years' course, it is announced by the *Canadian Medical Association Journal*. The first two years will be spent in the arts faculty, where a revised course will be given with special attention to languages. The next four years will be spent as a student in the medical faculty, and the final year will be a year's hospital training.

GENERAL

American Child Health Association.—The Commonwealth Fund of New York has entered into an agreement with the American Child Health Association whereby $50,000 a year will be contributed to the association in order that it may be prepared to administer the Commonwealth Fund Demonstration Program under a committee representing both groups. The National Child Health Council has voted to turn its functions in the field of child health over to the new association, and, with the consent of the American Red Cross, to transfer to it the administration of the Richland County and Mansfield, Ohio, Child Health Demonstration. Another demonstration is being conducted at Fargo, S. D., and a third was recently opened in Dallas, Texas. The finance committee of the association has authorized six scholarships, two for teachers, two for nurses and two for physicians, to enable

them to take courses fitting them to conduct better health work for children. The official organ of the association is the *Mother and Child*. A bureau of research was organized, May 1, with Dr. George T. Palmer, of the Detroit Board of Health, as director.

Society News.—The American Society of Tropical Medicine will hold its regular annual meeting, June 25-26, at San Francisco.——The semi-annual meeting of the Medical Society of Virginia, Maryland and District of Columbia will be held at Sandy Spring, Md., May 16, under the presidency of Dr. William L. Lewis, Kensington, Md.——The twentieth annual meeting of the Society for Experimental Biology and Medicine was held in New York, April 18. Holmes C. Jackson, Ph.D., who has served as secretary-treasurer of the society for the past ten years, was elected president to succeed Dr. George B. Wallace; Dr. James W. Jobling was elected vice president and Victor C. Myers, Ph.D., secretary-treasurer. The society was founded by the late Dr. Samuel J. Meltzer in 1903, and now has branches on the Pacific Coast, in Minnesota, western New York and Peking, China.——The sixty-fifth annual meeting of the American Chemical Society was held in New Haven, Conn., April 2-7, in Woolsey Hall, Yale University. Welcoming addresses were given by Colonel Bingham, lieutenant governor, for the state; Mayor Fitzgerald, for the city, and President Angell, for the university.

Bequests and Donations.—The following bequests and donations have recently been announced:

Englewood (N. J.) Hospital, $600,000, the result of a drive for funds.

New Samaritan Hospital, Philadelphia, $327,255, the result of campaign for funds.

Western Reserve University School of Medicine, Cleveland, $500,000, toward a training school for nurses, by Mrs. Chester C. Bolton, of Cleveland, and $63,000, under the will of Dr. R. D. Reynolds, of Greensprings, Ohio.

Yale University, New Haven, Conn., $100,000, anonymously.

Beth Israel Hospital, New York, $100,000; subscribed by twenty diners at a recent banquet of directors and friends of the hospital. A private room will be named for each of the donors.

Harvard University, Boston, $100,000, for research in forestry, anonymously.

Northwestern University, Chicago, $100,000, to be used as a permanent endowment fund, the income to go annually to the professor who has made the "greatest contribution to learning in the humanities," anonymously.

Nathan Littauer Hospital, Gloversville, N. Y., $50,000, as a memorial to his father, by Lucius N. Littauer, founder of the institution.

Ashton Memorial Hospital, Pipestone, Minn., $50,000, for the erection of a hospital in his memory, by [illegible]. Ashton, of Pipestone.

Kingston Hospital, R. I., for the erection of a new hospital at South Kingston, $50,000, anonymously.

Druid City Hospital, Tuscaloosa, Ala., $25,000, following a drive for funds, and $10,000 for a nurses' home, donated by J. T. Horne.

Charity Hospital, New Orleans, $25,000, anonymously.

Jewish Hospital, Brooklyn, Abraham Memorial, $75,000 by the medical staff for a new laboratory, museum and auditorium; from Dr. Leon Louria, $20,000; Dr. William Linder, $10,000; William Meruk, $5,000, and Nathan Strauss, $1,000. Dr. Joshua Ronsheim will equip a ward at his own expense.

Henry W. Putnam Memorial Hospital, Bennington, Vt., $15,000; New York Polyclinic Hospital, $11,000, and the New York Skin and Cancer Hospital, $10,000, by the will of Elizabeth T. Robinson.

New York Association for Improving the Condition of the Poor, St. John's Guild, New York Eye and Ear Infirmary, each $10,000; New York Skin and Cancer Hospital, and the State Charities Aid Association, each $5,000, by the will of Miss Grace Wilkes.

Elliot City Hospital, Keene, N. H., as a memorial to their daughter, $10,000, by Mr. and Mrs. Grenville of New York.

Jewish Hospital, Cincinnati, $10,000, to equip one floor of the new building, by Mrs. Myer Oettinger, and $10,000 by Mrs. Ranschoff, in memory of her husband, Dr. Joseph Ranschoff of Cincinnati, to equip the surgery department.

Bridgeport (Conn.) Hospital, $10,000, by Margaret A. Mallett.

American Theatrical Hospital Association, $7,000, proceeds of the annual benefit held by stage stars in Chicago.

Hahnemann Medical College and Hospital, Philadelphia, and the Children's Seashore House, Atlantic City, N. J., $5,000, each, by the will of Frank W. Hall.

Mount Sinai Hospital, New York, $5,000, by the will of Herman L. Walter.

Broad Street Hospital, New York, $5,000, by Henry P. Goldschmidt.

Meharry Medical College, Nashville, Tenn., from a friend in Philadelphia, and from Dr. William J. Gunn, Tallahassee, Fla., $1,000 each.

New hospital for negroes, St. Petersburg, Fla., $941, from the winter visitors.

For a hospital at Camp Crosby, Ind., 126 acres of land, and funds for the erection of the institution, by E. V. Ball of Muncie, Ind.

Levering Hospital, Hannibal, Mo., 100 feet of land adjoining the hospital, by W. B. Pettibone of Hannibal.

Denver Sanatorium, Denver, a bed has been donated by the Jewish Antituberculosis Association of Boston.

Deaconess Hospital, Phoenix, Arizona, furniture for a room, by the Korrick Benevolent Society.

Madison County (Ill.) Medical Society, the proceeds of the sale of the residence of the late Dr. Langley A. Whitley of Godfrey.

Richmond, Ind., the Smith farm, consisting of more than 200 acres, as a site for a tuberculosis hospital, by Mr. David Esteb.

LATIN AMERICA

Cerebrospinal Meningitis in Mexico.—Cerebrospinal meningitis was reported at Oaxaca among members of the police department. There were twenty-three cases and thirteen deaths. The outbreak was controlled by closing the police station and transferring headquarters to a nearby town.

Personal.—Dr. Afranio do Amaral has been invited to address the Pathological Society of New York on "Anti-Ophidic Immunity." He is assistant at the Instituto de Butantan, the headquarters of production of snake poison antiserums in Brazil.——The *Folha Medica* of Rio de Janeiro mentions the approaching departure from Brazil of Dr. Lewis Wendel Hackett, who for six years has been in charge of the work of the Rockefeller Commission in its campaign against hookworm in Brazil. It pays high tribute to his personality, aside from his work, and to his initiative in founding an institute of hygiene, a visiting nurse service in Rio de Janeiro, and in getting twenty Brazilian physicians to take the public health course at Johns Hopkins University.——Prof. Juliano Moreira was the guest of honor at a special meeting of the Brazilian Sociedade de Neurologia, etc., on the completion of his twentieth year as director of the psychiatric clinic at Rio de Janeiro. He was also tendered a banquet.——Dr. Bert W. Caldwell of the International Health Board has resigned as a member of the Mexican-American Yellow Fever Commission. Dr. Emmett J. Vaughan has arrived from Guatemala to assume Dr. Caldwell's duties.——Dr. Tomas G. Perrin, recently appointed professor of pathology in the Army Medical School of Mexico, has been made a knight of the Spanish Order of Isabel La Católica by the king of Spain.——Dr. B. J. Gastélum has been appointed assistant secretary of education.

FOREIGN

Japanese Physicians Commemorate Pasteur Centenary.—In commemoration of the centenary of Pasteur, 108,000 francs were donated by Japanese medical scientists and others to the Pasteur Institute. A set of beautiful flower vases was also sent to Paris with the money.

Wireless Medical Advice.—Our exchanges announce that ships of every nationality on the sea may obtain medical advice on request from the two great hospitals in Stockholm. The Swedish government has approved a proposition to broadcast medical advice in the Swedish, English, German and French languages.

Chinese Students in Japan.—The Japanese government has planned to assist Chinese students in Japan should China carry out its proposed plan to cease giving financial aid to Chinese students in other countries. There are now 1,179 Chinese students at government schools supported by the Japanese government; of this number, 115 are medical students.

Italian Interuniversity Institute.—The authorities at Rome have organized an institution with this name to promote closer relations between the universities of Italy and other countries. The *Riforma medica* states that the new institute is organizing fellowships for foreigners wishing to do research work in Italy. Senator Gentile is in charge of the work. The headquarters are in the Palazzo Venezia, Rome.

Malaria Research Fellowships.—The Italian government will offer two fellowships, of 12,000 liras each, for research on malaria. Themes suggested for special study are the development of malaria in regions with few mosquitoes; the biology of mosquitoes; their range of flight; the incidence of malaria before the mosquito season; relations between malaria and domestic animals; and the water plants, which promote or check proliferation of mosquitoes.

Midwifery in the Dutch East Indies.—The *Nederlandsch Tijdschrift voor Geneeskunde* states that even if several thousand trained midwives could be supplied to the population of the interior of Dutch India, there would be no demand for their services. The old women of the villages render the necessary assistance. There are training schools for midwives connected with the lying-in hospitals at Semarang and Batavia, where girls are given practical training. The problem now is to educate the natives to accept their assistance.

Consumption of Alcohol in Sweden.—The law of 1916 regulating the sale of liquor and wine provides that each man above 25 years of age shall keep a record book in which his purchases of liquors and wines are noted by the seller, the amount allowed being fixed according to his social position and the size of his family, the maximum allowance being 4 liters a month. Sweden, with a population of six million

inhabitants, consumed 31.6 million liters of liquors in 1921; 37.8 millions in 1920; 14.4 millions in 1919, and 7.5 million liters in 1918. During the same years, the consumption of wines amounted to 2.8 millions in 1921; 4.1 millions in 1920, and 5.2 millions in 1919.

Arsphenamin in Japan.—A memorial has been presented to the home minister of Japan by four prominent pharmacologists in regard to the protection of the manufacture of arsphenamin. It is claimed that the German government takes advantage of cheap labor now available in that country and is able to undersell Japanese manufacturers. The government is requested to adopt the license system which prevails in other countries, so that the importation of arsphenamin may be checked to save the Japanese industry from extinction. On the other hand, a petition has been made by physicians of the Imperial Medical College to permit the importation of German arsphenamin under special license.

Personal.—Professor Hajek of Vienna has been delivering the Orsted series of lectures at Copenhagen on rhinolaryngologic topics. He spoke at a local medical society on the pathologic anatomic manifestations of congenital syphilis. ——Bleuler, professor of psychiatry at Zurich, completes twenty-five years of teaching this month, and his friends are planning to celebrate the occasion.——The street at Berlanga nearest to the birthplace of Dr. Barragán, the president of the Spanish Urologic Society, has been renamed in his honor.——Dr. Hoffmann, professor of physiology at Würzburg, has been invited to deliver a three-months course of lectures at the University of Santiago.——Professor Brauer of Hamburg has been invited by the medical faculties and local medical societies to lecture in Moscow, Odessa and six other Russian cities. He was recently elected corresponding member by the Italian Academy of Medicine at Rome.——Among the new senators recently elected in Italy are two physicians, Professors Pestalozza and Baldo Rossi, of Rome and Milan.——A specially bound copy of the souvenir volume compiled in honor of Ramón y Cajal was recently presented to him with appropriate ceremonies. It forms two volumes and contains articles by his students and other admirers in a number of countries. This is only part of the tribute to Cajal that has been organized this year.——Dr. Henry Curwen, Kokstad, has been created a Companion of the Order of the British Empire for services to the government of Zanzibar.

Society News.—The Witwatersrand branches of the British Medical Association and the South African Medical Association have arranged a rapprochement which practically makes them one society. Every member of one will be an honorary member of the other, and the meetings will be held conjointly, the respective presidents taking the chair alternately.——The annual meeting of the Society for the Study of Inebriety was held in London, April 10. Dr. W. M. Feldman spoke on "Racial Aspects of Alcoholism."——The fifth International Congress of Historical Studies was held in Brussels, April 8-15.——The one hundred and fiftieth anniversary of the Medical Society of London, founded by Lettsom in 1773, was celebrated, May 3. Lord Dawson of Penn presided, and the Prince of Wales was the guest of honor. This is the oldest medical society in England.—— The seventh All-Russian Convention of Bacteriologists, Epidemiologists and Authorities on Sanitation will be held, May 22-28, in Moscow, it is announced by the Russian Health Department. To all delegates from foreign countries there will be assigned suitable quarters at the government's expense. Subjects to be discussed are: (1) immunity, serum-vaccine-chemical therapy, and diagnosis; (2) bacteriology and epidemiology of the most important contagious diseases in Russia; (3) disinfection and extermination of rats; (4) questions of organization. For particulars address the secretary of the Organization Bureau of the Bacteriological Convention, Petrovka 17, Moscow.——The *Presse médicale* announces that the First Congress on Tropical Medicine of West Africa is to convene at Loanda, July 16, on the invitation of the Portuguese government. The French, British and Belgian colonies are planning to send delegations, as well as Nigeria and the Transvaal, and the medical faculties of Portugal.

Deaths in Other Countries

Dr. **E. Reiss** of Frankfort-on-the Main, noted for research on refractometry of the blood and his monographs on internal medicine.——Dr. **M. Oeconomakis**, a neurologist of Athens. ——Dr. **E. Hahn**, a neurologist of Breslau, aged 65.——Dr. **P. J. Rubira** of Guayaquil, one of the founders of the Sociedad Médico-Quirúrgica.——Dr. **E. L. Brückner** who succumbed to typhus in the campaign against this disease on the eastern border of Germany.

Government Services

Hospital Train Organized

Pursuant to instructions of the Secretary of War the organization of Hospital Train No. 7, organized reserves (Oklahoma State Unit), has been authorized.

Veterans' Bureau Hospitals Opened

The U. S. Veterans' Bureau Hospital at Redwood City, Calif., was formally opened, April 7. In the neuropsychiatric unit there are twenty-two buildings.——U. S. Veterans' Bureau, Hospital No. 24, at Menlo Park, San Mateo, Calif., was opened for inspection, March 15. It will accommodate 500 patients.——The Veterans' Bureau Hospital, at St. Louis, was formally opened, April 8. The institution was erected at a cost of $1,250,000. The staff comprises twenty physicians, twelve consultants and thirty nurses.——Following a year's delay it was announced, April 12, that the government hospital for war veterans, at Excelsior Springs, Mo., will be rushed to completion and opened by September 1.——The war department announced, April 26, the dates for the opening of five neuropsychiatric hospitals which will accommodate 1,950 veterans. The hospital at Knoxville, Iowa, will be ready for occupancy, August 14; American Lake, Wash., October 10; Chillicothe, Ohio, December 15; Northampton, Mass., Feb. 9, 1924, and the hospital at Camp Custer, Mich., July 6, 1924.——The Veterans' Bureau will construct a 250 bed hospital at St. Cloud, Minn. Arrangements for the building of this hospital were made several months ago, but the actual work of construction has been delayed until the contract was signed this week.——A hospital for tuberculosis with a bed capacity of 750 will be available at Milwaukee, on June 1.

Head of Veterans' Bureau Issues Announcement on Training of Chiropractors

No more ex-service men undergoing rehabilitation will be permitted to take vocational training in chiropractic. Those who are taking this course under arrangements heretofore made by the Veterans' Bureau will be permitted to complete such course, but no new trainees for chiropractic will be permitted. Announcement to the above effect has been made by Gen. Frank T. Hines, director of the Veteran's Bureau. There are now 234 trainees of the Veterans' Bureau taking so-called chiropractic courses in various institutions. The government is of course required to perform these obligations, already contracted, but no new contracts will be made. The curb placed on chiropractic by General Hines is a part of his plan of placing the activities of the bureau on a more practical basis. The director feels that the list of occupations available for trainees is too large and ought to be reduced. What is wanted is that when veterans complete their various courses of vocational training, they shall be in immediate condition to earn their own living. In some states the practice of chiropractic is forbidden by law, and this obstacle results in a limitation of the field wherein the rehabilitated veteran might labor, and it is not regarded that an extension of this form of training will be of practical benefit to the veterans.

Appointments in Medical Corps

The Surgeon General of the Army has, under the present policy of the War Department, found it necessary to disapprove applications for reappointment of many former officers of the Medical Corps who are not eligible for appointment under regulations governing original entrance to the Corps. Former officers of the Medical Corps who are eligible in all requirements governing original appointments may be permitted to take examination for commission in the Medical Corps under the same conditions as applicants for original appointment. The effect of this policy will be to stabilize the medical personnel of the Army. When it becomes known that a resigned medical officer must qualify on the same basis, as to age and other requirements as an original applicant for a commission, it is probable medical officers will not resign as readily as they have in the past. An examination for appointments will be held on July 16-20, 1923 (THE JOURNAL, Feb. 17, 1923, p. 488).

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 9, 1923.

Public Health in India

In a joint letter to the *Times*, three authorities on tropical medicine—Sir Ronald Ross, Prof. W. J. Simpson and Dr. W. G. King—draw attention to the dangers of the reduction in sanitary service which the great political changes have brought about in India. During the decade 1910-1920, of the population subject to registration, amounting to 228,500,000, 3,500,000 perished from plague, nearly 4,000,000 from cholera and nearly 1,000,000 from smallpox—a yearly average of 800,000 deaths from preventable disease. In addition, 1,000,000 have died annually from malaria, which also is preventable. The general death rate, excluding the exceptional year of influenza prevalence, when the ghastly rate of 62.46 per thousand was recorded, in four years of the decade amounted to 30 per thousand, or within a fraction of that figure; in four years, this was considerably exceeded; the lowest rate, attained in but one year, was 28.72.

In contrast, England and Wales, which under former inferior sanitary conditions suffered severely from plague, cholera, and smallpox, had, in 1921, a general death rate of 12.9. In the census of 1891, the Indian male was credited with a mean expectation of life at birth of 24.59 years, in 1901 it had decreased to 23.63, and in 1911 to 22.59; while that of the Englishman, which was 40.17 in 1841, increased, under progressively improved sanitary conditions, to 44.07 by 1901, and to 51.50 by 1910-1912.

Criminal Responsibility

In a previous letter, the conclusions reached by a committee of the Medico-Psychological Association on the subject of criminal responsibility were given. The subject has also engaged the attention of the British Medical Association for some years, and in 1913 a special committee was appointed to consider the present state of the law. In due course it presented a report that has now been made the basis of memorandum of evidence, prepared under the authority of the council, for submission to a committee appointed by the lord chancellor to report on what changes, if any, are desirable in the law relating to criminal trials in which the plea of insanity is raised. The council cannot suggest any improvement on the present procedure in the case of a prisoner, under sentence of death, whose sanity is questioned, i. e., the appointment by the secretary of state of two physicians to examine the prisoner and inquire into the matter. The council holds that the following might be accepted as a fair definition of responsibility for crime. An act may be a crime although the mind of the doer is affected by disease or defective power, if such disease or defect does not prevent him (*a*) from knowing and appreciating the nature and quality of his act or the circumstances in which it is done; or (*b*) from knowing and appreciating that this act is wrong, or (*c*) from controlling his conduct unless the absence of the power of control is the direct and immediate consequence of his own default. But no act is a crime if the doer at the time is prevented either by defective mental power or by any disease affecting the mind from satisfying any of the conditions mentioned above. Every person found "guilty but insane" should have the same right of appeal as other convicts. Persons found "unfit to plead" and ordered to be detained should be entitled at any time for a retrial as to fitness to plead. Medical officers of prisons should have had experience in the diagnosis and treatment of disorders and defects of the mind. The special committee of the association is of the opinion that (1) when there is reason to believe that the accused suffers from mental defect or disease, machinery should be provided for his independent and impartial examination; (2) the present method by which medical evidence is presented by the prosecution and the defense is bewildering rather than helpful to both the judge and the jury; (3) a panel should be formed of physicians with expert knowledge of psychologic medicine, and questions of mental defect or disease should be referred to them. When the offense is punishable by death or a severe penalty, the examination should be made by not less than three members of the panel. The report of such an examination should be furnished to both prosecution and defense before the trial, and at the trial evidence should be given by the expert or experts and should be considered by the court in deciding the responsibility of the accused.

Suicide and Homicide in England as Compared with America

Official figures of suicides and homicides in this country and in America, recently published by the registrar-general, afford a remarkable contrast:

Rates of Suicide for Each Hundred Thousand of Population

	1912	1913	1914	1919	1920	1921
Ninety-five American cities.....	19.5	19.7	21.0	14.3	12.4	15.7
England and Wales.....	9.9	9.6	10.1	9.1	9.1	9.9

Rates of Homicide for Each Hundred Thousand of Population

	1912	1913	1914	1919	1920	1921
Twenty-eight American cities...	8.3	8.8	8.5	9.1	8.5	9.3
England and Wales.....	0.9	0.8	0.8	0.8	0.8	0.7

In America there has been an increase of homicide, but a decline of suicide; in this country homicide has declined and suicide has not increased. Our figures are extraordinarily low, revealing a steadiness and respect for law and order, a characteristic factor, as compared with America. However, we must take into account the facts that the American figures refer only to cities, while ours refer to the whole country, and also that city populations are more prone to acts of violence than country populations. How far the American figures are due to the adverse condition of having to assimilate foreign peoples is another question.

A New Light on Epidemiology

In a report to the Medical Research Council, Surgeon-Commander S. F. Dudley of the Royal Navy has thrown a new light on epidemiology. His observations were made at the Royal Naval School at Greenwich, where 1,000 boys of good physique reside under excellent sanitary conditions and constant medical supervision. In addition, there are 100 day boys who mix freely with the boarders at work and play and at some of the meals. The immunity condition of the school in regard to diphtheria was examined by means of the Schick intracutaneous test, which was found to be very reliable. The remarkable observation was made that while 300 cases of diphtheria or scarlet fever occurred in the course of the year, not a single case occurred among the day boys, who played, worked and ate with the boarders. Another curious fact was that in an outbreak of diphtheria, five cases occurred simultaneously in five different dormitories. It was considered improbable that one boy would infect five others, all in different dormitories, classes and messes, and yet not infect any in his own dormitory. The same phenomenon was observed a month later in the case of scarlet fever. It was found that while the boarders used a common stock of

pens, each day boy brought and used his individual pen. A penholder which had been sucked and bitten by a boy known to have diphtheria yielded a virulent culture of diphtheria bacilli. It was concluded that both epidemics started in this way. A boy who happened to harbor the virus in his mouth sucked his pen. After the lesson he threw the pen into the classroom box. Another class assembled, and one member picked up the infected penholder, which he also sucked. This explains the origin of the epidemics, but not their spread. Why did the day boys always escape? Dudley explains this by dormitory infection. He explains the greater possibility of infection in dormitories than outside by a principle which he terms the "velocity of infection." He argues that in many infectious diseases there is a certain minimal dose of the infective agent necessary to cause the disease, and that a smaller dose is destroyed by the defensive mechanism of the body. If a subject receives a number of subminimal doses, which, when totaled, exceed a minimal infective dose, it is reasonable to suppose that whether or not he contracts the disease must depend on the rapidity with which these fractional doses are received; that is, whether the rate at which the infective agents can be dealt with is greater than the rate at which they are received. During the day the immunity mechanisms were able to neutralize, as rapidly as they were received, the occasional dose of infection to which all were exposed. At night the conditions in the dormitories allowed continuous bombardment with infected droplets of saliva, so that the velocity at which the infection was received was greater than that at which it could be destroyed. This principle would also account for the development of immunity without symptoms, and explain other difficulties in practical epidemiology. During an epidemic of diphtheria, many boys increased their resistance without manifesting any symptoms and without even developing recognizable antitoxin in the blood. There therefore took place a coincident epidemic of immunization among those who never permitted a multiplication of the subinfective doses received. At the same time, there occurred an epidemic of contact carriers in the school. Dudley concludes that consideration of this "epidemic immunity" should remove the necessity of postulating unknown mysterious influences as factors in an epidemic constitution.

Future Warfare

At the Royal Society of Medicine, Col. J. F. C. Fuller, general staff officer (who is not a medical officer), in a highly idealistic sketch, introduced a discussion on some of the medical problems of future warfare. He declared that war was always more of a psychologic than a physic problem, and had wrongly been regarded as a competition in slaughtering. With the development of psychologic science it would be more truly envisaged as a struggle of mind against mind, or of genius against mental mediocrity, in which bloodshed and destruction would be reduced to a minimum. The element of destruction was not only not essential, but even disadvantageous to the victors; the obsession to kill would be gradually eradicated from the military mind. In the last war it was brains, not muscle, that decided the victory.

In the future, the decisive weapons would be ethical and economic, and only in a restricted sense, military. Ethical warfare would rely on highly organized propaganda to demolish the national will of the enemy and to discredit his cause. Economic warfare would attack the national will through the national stomach. Military warfare would take the form, chiefly, of gas attacks from the air on city populations. These would temporarily paralyze, but not destroy the community. By mustard gas, war could be waged without causing widespread death or mutilation. Aircraft on a large scale could be used to envelop a people with some vesicant chemical which would render them incapable of resistance. Indeed, the future war might take the form of anesthetizing the enemy. Colonel Fuller drew a picture of 500 aeroplanes putting London to sleep for forty-eight hours, and then landing enemy police, who, with the support of tanks, would control the situation until surrender and indemnity were forthcoming. This would be much more profitable to the enemy than wholesale destruction.

Future warfare would be astonishingly rapid. The target would be the civil population. On them, war would break with the terror of a mental earthquake. Success would depend on delivery of the psychologic knockout blow. It should be the work of the medical profession in peace to prepare the public nerve for the shock of psychologic attack. Civil physicians must also be prepared to cope with tens of thousands of gas cases, and every one must be instructed in self-protection against a gas attack.

Fatal Accident in the Administration of Chloroform

An inquest was held on a woman, aged 25, who died during the administration of chloroform in a hospital. The operation was a nasal one and special apparatus, which had been wrongly put together, was used. The result was that pure chloroform instead of chloroform vapor was sprayed into the patient's throat. The jury returned a verdict of death by misadventure.

PARIS

(From Our Regular Correspondent)

April 6, 1923.

The New Law Regarding Enlistment

Parliament has just passed a new law which makes the period of enlistment in the active military service eighteen months. The total duration of military service is twenty-eight years, which is divided into four different periods: active service, eighteen months; on the unattached list, two years; first reserve, sixteen and a half years; second reserve, eight years.

For the estimation of physical aptitude, a medical commission composed of three army physicians, one of whom shall be attached to the reserve and shall not be a resident of the arrondissement (the largest administrative division of a department), is charged with the preliminary examination of young men who make such request, before the council of revision, or exemption board, meets. The commission examines each man separately, after first inspecting his sanitary record, and notes his aptitude or inaptitude for the various branches of military service, in conformity with his morphologic characteristics and his professional capabilities. The commission may demand of the exemption board that doubtful candidates be given an expert medical examination and that they be sent for such examination to such specialists, military or civilian, as shall be agreed on by the minister, or that they be placed in a hospital for observation, without waiting to be first enrolled.

As for the exemption board, or the council of revision, as it is termed here, it is assisted by an army physician or, if a physician of the regular army is not available, by a physician of the reserve, and cannot take final action until it has received the opinion of a physician.

From the standpoint of physical aptitude, the council of revision divides the men who present themselves into four categories: (1) those who are found fit for military service; (2) those who, while suffering from some relatively slight ailment, are regarded as sufficiently strong for auxiliary services; (3) those who, possessing a weak physical constitution, are placed in the deferred class, subject to a second examination, and (4) those whose bad general constitution, together with certain weaknesses, establishes their functional

impotence, either partial or complete, and who are therefore exempted from all military service, whether armed or auxiliary.

Military Service as Affecting Medical Students

In times of peace, young men who make the request in the interest of their studies may be granted the privilege of postponing their enlistment, from year to year, up to the age of 25. Medical students perform their active service in the army medical corps. In the medical schools a special two-year advanced course for the benefit of prospective members of the army medical corps has been arranged for by the minister of war and the minister of public instruction. This course is optional.

Students of medicine who finish this special advanced course are required to serve, when later they enlist, only one year, six months as auxiliary physicians and six months as *médecins aides-majors de 2e classe de reserve*, having the relative rank of second lieutenant, if they are doctors of medicine or have been appointed, on the basis of competitive tests, hospital interns in a city where there is a medical school, and provided further they have sixteen courses to their credit, representing four years of study. If they have only twelve courses to their credit, representing three years of study, they must serve an entire year as auxiliary physicians. Students who do not take this special course must serve, at the end of their respite, eighteen months in a formation of nurses.

International Congress of Librarians

Under the auspices of the Association des bibliothécaires français et des sociétés bibliophiles, an international congress, which is composed of delegates from the various societies of librarians and bibliophiles in different countries, is being held at the Sorbonne. M. Louis Barthou, formerly chairman of the council of ministers, now president of the Commission supérieure des bibliothèques, has accepted the honorary chairmanship. The two previous congresses were held in 1900, at Paris, and in 1910, at Brussels. The third congress was to have been held in 1915, but it was postponed on account of the war. At the present congress, the bibliophiles are meeting with the librarians, for the first time. In connection with the congress, two special exhibits have been prepared. One exhibit contains old manuscripts and anything pertaining to the history of book making from the earliest period to 1870. The other exhibit comprises books published since 1870.

Criminal Abortion and Privileged Communication

M. J. Martin, member of the superior council of the Assistance publique (public charities) calls attention in the *Revue philanthropique* to the abnormal situation that is created by too broad an interpretation of the right of privileged communication in relation to criminal abortion. Let us suppose a death has occurred as the result of criminal abortion. If the person on whom the abortion was performed dies in her home, the physician delegated by the mayor's office to verify the death can, if the cause of death appears to him suspicious, notify the authorities and a necropsy will reveal the crime. But the case is quite different if death takes place at the hospital, for under these circumstances the attending physician is the one whose duty it is to make the confirmation of death, and he is certain not to notify the authorities, considering himself bound by the right of privileged communication. It is against the latter interpretation that Martin protests, and he quotes the text of the Penal Code which, while it makes it a misdemeanor to violate the right of privileged communication, allows an exception to be made in "cases in which the law would oblige physicians to become denouncers." Is not the law of 1892 an act in derogation of the right of privileged communication, since it requires a physician to report cases of epidemic disease that come under his observation? If legislators have, in the interest of public health, made the law less rigorous in its application, is it not in place to apply it less rigorously in the face of social interests of the greatest importance? Can we allow the right of privileged communication to be interpreted in such a manner as to render physicians accomplices in a crime as dangerous as abortion, which rages in France with particular intensity? The annual number of criminal abortions in France is estimated at 100,000, whereas the last criminal statistics published by the minister of justice show that the number of persons brought to trial in 1919 for abortion was only 301, while the number of persons receiving a sentence did not exceed 131.

Death of Dr. Gambini

The government reports the death of Dr. Gambini, a colonial physician, at Colbert, department of Constantine, from typhus contracted in the line of duty.

Classification of Children into Different Groups for the Purpose of Physical Training

At one of the recent meetings of the Société de médecine militaire française, Dr. Boigey presented an interesting communication on the best methods to be employed to prevent children and adolescents from being overexerted during physical training. Most of the accidents and untoward incidents observed in children and adolescents during or following their participation in physical exercises are due to the fact that physical directors sometimes require the same effort of subjects that have never been examined that they do of healthy persons; whereas narrow chests, defective heart action, impaired kidneys and weakened nervous systems may demand a more cautious attitude. Boigey reports a typical example: Recently, several groups of children, coming from different neighborhoods, were to assemble at a given point. They were told not to be content with arriving at the appointed hour but to strive, if possible, to be the first to reach the rendezvous. The groups were composed of children of various ages. The youngest were aged 7; the oldest were 14 or 15. The oldest in each group assumed command. The groups set out to reach the goal, the younger children following the older ones, the older children in each group urging the younger children to walk faster and not drop behind the squad, so that they might be the first to arrive. The spirit of emulation increased the energy of all members of the group tenfold. Everybody reached the rendezvous on time, but that evening, after returning home, many parents, worried over the condition of the children, called a physician, who found that the youngest were suffering from fever due to overexertion. In order to prevent a repetition of such occurrences, Boigey recommends the classification into groups, on a physiologic basis, of children and adolescents who are to engage in sport activities. This classification should be based not on the age but on the weight, chest expansion, height, muscular strength, the general physical build, psychomotor reactions, etc. The medical examination of the heart and the lungs, and the results of an inquiry into the previous pathologic history of the children should likewise be taken into account. Homogeneous groups should then be formed, composed of children or adolescents having approximately the same weight, vital capacity, height, speed and strength (as shown by a dynamometric test). Those who have an unfavorable pathologic history will be grouped together and will be subject to a special medical surveillance. Those who have never suffered from any serious illness will be placed in a group by themselves.

On the other hand, Boigey recommends that the code established by the directors of the international Olympic games

be left out of account in the training of children and adolescents, for the reason that this code was elaborated to control the contests of athletes with exceptionally strong constitutions and not to regulate the exercises and the games of adolescents from 14 to 16 years of age.

VIENNA

(From Our Regular Correspondent)

March 26, 1923.

Health Statistics for 1922

In 1922, conditions of public health continued to improve. The number of deaths was 30,068, of which 5,552 were due to tuberculosis. This compares favorably with 11,531 out of a total of 52,000 in 1918, but is slightly higher than in 1921, when the number of tuberculosis deaths was 5,265. Infant mortality is much lower than in former years; in 1910 the death rate, under the age of 1 year, was 165.66 per thousand; in 1921, 137.17; in 1922, 138.32. In 1922, the number of births was 29.982; in 1918 the figure was 29.216 per thousand of population. More persons reached the eightieth year than was the case twenty years ago, and the general conclusion to be drawn from these facts is that human life expectancy is improving. The percentage of cancer and circulatory diseases has remained fairly stationary, and influenza has again fallen to the prewar proportion. The age group 10 to 15 years has suffered most, no doubt as an after-effect of the starvation years from 1916 to 1919. Of 1,189 persons who attempted suicide, 440 were successful. These figures are higher than in any year since 1914. It is an unexplained fact that in war time the number of suicides has always been low; and also that in summer and spring (May to August) more persons kill themselves than in the gloomy periods of autumn or winter. The suicide age limits last year were: a girl of 10 years (death by hanging) and a woman of 82 (by poison). Mental instability must be regarded as the underlying cause in the majority of cases; trifling reasons were alleged by more than 70 per cent. of those who attempted suicide. Men preferred death by shooting or hanging; women resorted to poison, drowning or a leap from a top story.

Partial Strike in the Vienna Hospitals

Owing to differences between the managing board and nursing staff of a private hospital, the board dismissed all nurses and appointed a number of trained nuns to their posts. This has caused widespread disturbance in the relations between the nursing staffs and managing boards of all other Vienna hospitals, as the dismissed nurses appealed to their "union" for protection. The union (of hospital attendants) is trying to exert pressure on the government to compel reinstatement of discharged nurses by proclaiming a partial strike in all state and private hospitals. No cooking, washing or cleaning is done for the physicians or other workers, but the patients are looked after and get their meals, and operations are not interfered with. This method of sabotage, or passive resistance, is most insidious, as the innocent suffer more than the guilty; it demonstrates how political weapons can be used in a purely private dispute. As the government is at present composed of antisocialistic persons, and this strike is strictly a union method, the former is most reluctant to interfere and threatens to close some hospitals and concentrate the patients in larger institutions, unless the proper working of all hospitals is guaranteed.

Asymmetry of the Body

An interesting lecture on the asymmetry of the human skeleton and its consequences was given by Dr. Finkles at the regular meeting of the Biologic Society of Vienna. It is well known that, as a rule, the right hand and arm are stronger than the left, the left half of the skull is larger than the right, and differences exist between the two sides of the body in the ribs, hips and shoulders. The lower extremities also differ from one another; but, contrary to popular belief, the left leg is usually the stronger. In more than 60 per cent. of adults, the left leg is the longer, larger and heavier by 5 per cent. This corresponds with conditions in quadrupeds: the right fore and left hind leg act synchronously; the gait of men is based on the same principle. In right-handed people, the right half of the body is kept a little forward in walking. Therefore the human gait is prone to make men keep to, or, rather, to deviate toward, the right. Experiments with various individuals have shown the correctness of this rule. In foggy weather, or on dark nights, when orientation is impossible, a man rowing a boat goes round in circles to the left; in walking, he tours to the right. Animals—dogs or rabbits—when temporarily deprived of the use of eyes, ears and nose, always swim in circles and return to their starting point. Fishes, pigeons and swallows give similar results. It is a mistake to organize traffic in large cities to "keep to the left" as it requires unnecessary expenditure of energy.

The Results of Prostatic Operations

In a paper before the Medical Society of Vienna, Prof. F. Rubritius discussed the results of surgical treatment of hypertrophy of the prostate. His series included seventy-seven well controlled and well nursed private patients with reliable after-care. All came under care with an advanced state of infection and insufficiency of the kidney. He employed either cystotomy alone or two separate operations. The changes in the kidney were but little amenable to treatment, and produced either a (possibly reflex) polyuria or oliguria. Rubritius prefers the suprapubic (Peyer) method of operation, and considers the perineal method rarely necessary. Exact kidney function examination is essential. All "prostatic" patients are advised to submit to operation, especially if there is complete occlusion or hemorrhage. The only contraindications are severe diseases of the lungs and heart. Rubritius found that many patients can be made fit for radical operation by first establishing free drainage. Fifty-two patients were operated on in one sitting, and twenty-five in two. Of the first group, seven, of the second, three died. These deaths were not actually due to the operation, being caused by intercurrent disease (uremia, peritonitis, pneumonia). All the other patients that have been investigated (after three and one-half years) are doing well, except the carcinomas (three cases). It is essential that the patients be seen and operated on early, before infection and kidney trouble develop. In the worst cases, in which only palliative measures are admissible, a suprapubic bladder fistula is advisable. As in about 25 per cent. of the cases malignant masses are present in the prostatic tumors, it is most important to perform an early radical operation.

An Attempt to Quash "Professional Secrecy"

The Vienna Medical Council, the official representative board of practitioners of the city, recently was forced publicly to protest against an attempt by the highest judge of the republic to remove the safeguard of professional secrecy hitherto guaranteed to the physician by law, by an order issued to all medical corporations. The order stated that "for some time practitioners had failed to inform the court or the police of cases of attempted abortion coming to their professional knowledge. As deliberate abortion is a crime, professional men are required to give information of every case of suspected induced abortion, or of a suspicious death arising in their practice. Surgeons of hospitals, sanatoriums and nursing homes must inform the police, not only when they are convinced that an interference has taken place, but

also when they suspect it." The Austrian law actually says: All medical workers, including pharmacists, midwives and coroners, must give due information whenever they learn of a case of illness, injury, death or birth in which suspicion of foul play or violence by a third person is justified. The medical council points out that the demand of the court is in contravention of the law, which stipulates that the physician is bound to professional secrecy under penalty of law, and may not disclose any knowledge obtained in a professional way unless questioned by duly qualified authorities. The physician is not an investigator for the court, and the decision whether criminal play is suspected or not must be left to his discretion. If the order of the court were put into effect, every woman of child-bearing age suffering from hemorrhage might be suspected and could be denounced to the police—an impossible situation spelling ruin to the profession and disaster to public health, for no woman would consult a physician under such circumstances. Therefore, cancellation of this order is demanded by the council.

Births, Miscarriages and Decrease of Population

In an exhaustive review of the problem of voluntary birth control, Dr. Waldstein gives interesting figures on the number of births and miscarriages reported in the years 1860 to 1915. A drop in the absolute number of children born is evident. In Germany, in 1880, 153 children were born for each thousand women between the ages of 15 and 49; in 1890 the figures went down to 146, and in 1900 to 141. In each thousand married women, the figures were 205, 127 and 96, respectively. In Vienna, in 1880, there were 40 births and 28 deaths for each thousand inhabitants. In 1890, the figures were: 32 births and 29 deaths. Ten years later they were 31 and 20; in 1910, 22 and 16; and in 1919, 17 births and 14 deaths. Since then the ratio has been reversed. If miscarriages are considered, it is found that statistics extending over seventy years (commenced by Hegar and Bumm in Germany) show that at least 10 per cent. of all pregnancies before the war terminated in abortion. Since the war, the percentage has risen to nearly 20. It is an important question whether, at present, procreation takes place too seldom, or whether too many fertilized ovums perish, either by induced abortion or from natural causes. Dr. Waldstein has records of 1,217 women, of whom 506 were primiparas, 290 secundiparas, 132 tertiparas, up to two pregnant for the twelfth time, and six more than twelve times. These women together had 3,213 pregnancies with 18 per cent. of abortions and 2 per cent. of stillbirths. At the end of four years there were living 45.5 per cent. of the children; 34.5 per cent. died before the fourth year. This means that of 3,218 pregnancies only 1,451, or 45 per cent., resulted in viable children. In two other series taken from Berlin and one from Vienna, it was found that in 640 women over 50, there had been 4,060 pregnancies. This means that, during the twenty-five years of fecund life (from 20 to 45) each woman was pregnant every four years. Thus it appears that it is natural selection (miscarriage and infant mortality) that tends to keep down the number of individuals. In a series investigated by Hamburger comprising 1,042 women beyond the procreative age, who had had 7,261 pregnancies, it was found that, on an average, 18 per cent. of all pregnancies terminated prematurely (abortion) and only 50 per cent. of all children born alive reached puberty. In his series there were 2,300 women with more than ten, and 579 with more than fifteen conceptions. In Vienna, similar conditions prevail, and it may be stated that in the middle and working classes each woman has at least two pregnancies in order to bring up one child to the fifth year. The decrease in population is not due to lack of conception, but to dangers during the period of pregnancy and high infant mortality.

BERLIN

(From Our Regular Correspondent)

March 24, 1923.

Increased Incidence of Suicide

The increased incidence of suicide in the nineteenth century is explained by Bratz in the *Deutsche medizinische Wochenschrift* as due to the fact that the sense of oneness with the family and native land has become obscured. He maintains that the marked development of individualism has loosened man from his previous moorings, and his newly won freedom has borne him into dangerous channels that affect his spiritual and moral life, the final outcome of which has been an increase in suicide. The upward trend of the suicide curve is in inverse relation to the curve of natural deaths, which have decreased in about the same proportion as suicidal deaths have increased. Some countries—Germany, France, Denmark and Sweden—have a high suicide rate; others—England, Norway and Holland—have a low rate. These differences may be noted also among German and Swedish settlers in the United States, in contradistinction to Norwegians and Hollanders. As a rule, suicide is more frequent among immigrants than among their countrymen at home. In China and Japan suicide is common, while in India it is rare. The greatest number of suicides occur in May and June; the fewest, in December and January. As to religious faiths, suicide occurs least frequently among adherents of the Greek church. Roman Catholics and Protestants are next in order. Among the Jews, suicide has become much more frequent. Suicide is more common in cities than in rural districts. Whereas in the occident the incidence of suicide is greater among the men, in India, where widows are burned to death, the incidence is greater among the women. The suicide rate usually increases with age. At the age of puberty, the rate among females is almost as great as among males. Suicide is more frequent in the single or widowed than in the married; it is most frequent in divorced persons. The incidence is greater among persons who are childless than among parents. Various callings and professions show characteristic differences. The rate is low in farmers and laborers who work in the open air, but high among capitalists, soldiers, hotelkeepers and itinerant laborers (floaters). Small but steadily increasing possessions seem to afford strong protection against thoughts of suicide. In western Europe, psychic and emotional disturbances are the most frequent cause of suicide. Disease as a contributing factor seems, however, to be becoming more and more frequent. The most frequent forms of suicide are hanging, drowning, shooting and stabbing with a knife. Men resort commonly to hanging, to the revolver or the knife, whereas women take to the knife, poison or to throwing themselves down from a height. The principal causes of suicide are found to be: (1) lack of sense of unity with the family and the community; (2) financial reverses; (3) hereditary tendencies, and (4) condition of health.

The Carriage of the Human Body

In the recent Leyden Lecture of the Association for Internal Medicine, Professor Magnus reported his investigations into the location of spinal and cerebral centers that control muscle tension and maintain the erect posture of the body. Magnus showed a number of photographs of decerebrated animals—guinea-pigs, rabbits and cats. The animals were alive and could, after a fashion, sit up, stand or even walk, but there were great differences in their attitudes and movements, according as the brain had been removed a few millimeters higher or lower. For instance, an erect posture was not possible unless, in addition to the spinal cord, the medulla oblongata was preserved. Magnus showed a cat that stood with hyperextension of all four limbs. A push caused the animal to fall, but it still maintained while lying down the

overextended position of the legs characteristic of decerebration. When the position of the head is changed, the attitude of the body alters. This is caused by the interplay of two groups of reflexes; one group has its origin in the labyrinth of the internal ear, the significance of which for the equilibrium of the body is well known; the other group originates in the neck. In order to eliminate the neck reflexes, the neck, occiput and shoulder girdle were encased in a plaster cast. Under these conditions, the degree of extension of the muscles and the consequent position of the legs depend on the position of the head—whether it is in normal position, inclined to one side or thrown backward. When the labyrinths are removed by operation and the neck reflexes are tested, peculiar attitudes result. If the head is bent forward and downward, the fore legs collapse, while the hind legs are extended. If the head is bent upward and backward, the animal stands on its fore legs and sits on its hind legs. If the head is bent to one side, either both right legs or both left legs collapse. If the two groups of reflexes act together, they may accentuate or counteract one another. Observation of animals in the open; for instance, in the Zoological Gardens, reveals that these reflexes are operative in normal living animals.

When, in the experimental animals, a little more brain tissue is allowed to remain intact, new groups of reflexes are observed. Under these conditions, when the cat standing with legs overextended is given a push, it falls but gets up again at once. When the animal is held up loosely in the air, the head at once assumes its normal position owing to the reflexes of the labyrinth. If the labyrinths are removed, the head of the animal, when held up, remains in any position in which it is put. But when the animal is laid down on any surface, a cutaneous reflex is stimulated and the head assumes at once its normal position. If now a secondary stimulus is applied to the other side; for instance, by laying a board on the prostrate animal, the head no longer remains in a normal position. In guinea-pigs and rabbits it has been ascertained that there are four groups of attitude reflexes. In cats, dogs and apes, there are, in addition, optical attitude reflexes, which, however, disappear at once if the corresponding portions of the brain are removed.

In the space at our disposal it is possible to discuss only a portion of the speaker's experiments; Magnus gave further details of the methods he and his co-workers employed in investigating the anatomic location of the reflex centers concerned with certain attitudes. He also indicated the value of these experiments to anatomy, physiology and clinical medicine. Hitherto, researches on the brain have started with the cerebral cortex and have sought, by penetrating gradually deeper into the brain, to discover the locations of the various cerebral functions. Magnus has taken the opposite course. He first removes such a large portion of the brain that most of the functions are abolished. Then, in other animals of the same species, he successively removes a few millimeters less in order to discover what functions are thereby restored.

The Wassermann Test for Tuberculosis

The *Deutsche medizinische Wochenschrift* (**49**:303-334 [March 9] 1923) contains an article by August von Wassermann on the experimental bases for a specific serodiagnosis of active tuberculosis. Wassermann's recent researches have taken an entirely new direction, and he has departed from the view, which has heretofore been tenaciously held, that the antibodies in the blood serum of a person suffering from an infectious disease, so far as they are demonstrable at all, are qualitatively identical with those that appear in the blood of animals through artificial immunization with the causative agents of the diseases in question. It has been found possible to create a serodiagnostic test for tuberculosis which will permit a more exact differentiation of a tuberculosis serum from a syphilis serum than was possible with the antigen used in recent years by French investigators. For the dissolution of bacteria, Wassermann uses a tetralin preparation. (NOTE.—Tetralin is a naphthalene, with four molecules of water of hydration, which has an entirely neutral reaction.—ED.). On the basis of his results, he reaches the deduction that every person, whether child or adult, whose blood serum reacts positively to the tetralin-tuberculosis-lecithin antigen is suffering from active tuberculosis. In the very frequent cases in which the physician is in doubt, especially in children in whom tuberculosis may reasonably be expected to be present, the seroreaction may furnish decisive evidence. In regard to the significance of a negative result of this serum test, Wassermann is loath to express himself definitely as yet. The test for which he gives the directions is rather delicate, but it will in many cases give the physician a definite basis to work from. To the main question whether, by serodiagnosis, we may prove the existence of tuberculosis, that is, the presence of tuberculous tissue or only the existence of a tuberculous infection—the presence of tubercle bacilli—no definite reply could be given. That would have to be settled by clinical observations extending over a period of years.

To representatives of the Berlin press, Wassermann expressed himself thus concerning his test: "Although several French investigators, among whom I may mention more particularly Besredka and the school of Calmette, had done some valuable work in this field, it had not as yet been definitely established on what a serodiagnosis for active tuberculosis really depended, and consequently it had not been possible with sufficient certainty to differentiate between the serums of syphilis and tuberculosis. The researches that I have been conducting for some time in the Kaiser Wilhelm Institute for Experimental Therapy have developed a clear view of the subject. It is, therefore, now possible to make the biochemical composition of the reagent (Diagnostikum) specific, so that it gives a positive reaction only with the blood serum of tuberculous subjects; that is, in active tuberculosis. The procedure seems to me especially suitable for welfare centers dealing with children in whom tuberculosis is suspected (but, of course, also for adults), in order to establish whether, in a given case, a latent tuberculous infection has developed to the point that an active tuberculosis is present. The test for tuberculosis resembles the test for syphilis to the extent that in both cases the blood serum of the patient has a relation to certain fatlike substances or lipoids. But the relative proportions vary in the two diseases, and, in addition, it will be noted that the blood serum of tuberculous subjects needs for its reaction, besides the lipoids, certain other substances that are contained in the tubercle bacillus. Through the establishment and consideration of these facts, I have succeeded in modifying the two procedures in such a manner that a confusion of the two diseases in an examination of the blood can be prevented, which has heretofore proved impossible."

Marriages

HENRY W. HOAGLAND, San Diego, Calif., and Paris, France, to Mrs. Katherine M. Freeland of Los Angeles, recently.

ARTHUR TREW BLACHLY, Portland, Ore., to Miss Winifred May Hubbard of Fort Dodge, Iowa, April 20.

GEORGE M. BOTELER to Miss Cora Connett, both of St. Joseph, Mo., at New York, April 7.

EDWIN G. SCHWARZ to Miss Annette Lederman, both of Fort Worth, Texas, March 4.

THOMAS NEILL BARNETT to Miss Mary Gladys Reamy, both of Richmond, Va., March 28.

Deaths

George Lincoln Goodale, Cambridge, Mass.; Bowdoin Medical School, Portland, 1863; Medical School of Harvard University, Boston, 1863; curator of the botanical museum and professor of botany, at Harvard University, until his retirement as professor emeritus in 1909; member of the National Academy of Sciences, the American Society of Naturalists, the Association of American Anatomists, the American Physiological Society, and past president of the American Association for the Advancement of Science; aged 83; died, April 12.

Harry Edward Bradley, Milwaukee; New York University Medical College, New York, 1887; veteran of the Spanish-American War; also a druggist; member of the Milwaukee Neuro-Psychiatric Society; formerly on the staffs of the Northern Hospital for the Insane, Winnebago; the Milwaukee County Asylum for Mental Diseases, Wauwatosa, and the Johnston Emergency Hospital, Milwaukee; aged 61; died, April 5, of influenza and pneumonia.

Lee Simon Shoninger, New York; Medical School of Harvard University, Boston, 1904; member of the Medical Society of the State of New York and the Massachusetts Medical Society; formerly on the staffs of the Massachusetts General Hospital, Boston, and the Mount Sinai Hospital, New York; served in the M. C., U. S. Army, during the World War; aged 44; died, April 7.

Frank Hall Williams, Portsmouth, Ohio; Miami Medical College, Cincinnati, 1883; member of the Ohio State Medical Association; served in Palestine with the American Red Cross during the World War, and as chief medical officer of Beirut; appointed medical director with the Near East Relief in Armenia in 1919; aged 64; died, March 4, at Cincinnati, following a long illness.

John Prentice Rand, Worcester, Mass.; New York Homeopathic Medical College, New York, 1883; lecturer on the history of Medicine at the Boston University School of Medicine, Boston, 1906-1916; member of the National Tuberculosis Association, and past president of the Massachusetts Surgical and Gynecological Society; aged 66; died suddenly, April 16, of heart disease.

George Frederick Payne, Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1892; founder, professor of pharmacy, and president of the Atlanta College of Pharmacy; state chemist of Georgia, 1890-1898; former president of the American Pharmaceutical Association; author of *Payne's Dictionary of Pharmacy;* aged 70; died, April 18.

Henry S. Summers, Westpoint, Neb.; Medical Department of Western Reserve University, Cleveland, 1882; member of the Nebraska State Medical Association; formerly superintendent of the Hospital for the Insane, Norfolk; aged 67; died, April 10, following a long illness.

Isaac C. Gable ✠ York, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1877; past president of the Medical Society of the State of Pennsylvania; formerly member of the state board of health; aged 73; died, April 12, following a long illness.

Henry Arthur Mitchell ✠ Elkton, Md.; University of Pennsylvania School of Medicine, Philadelphia, 1900; served in the M. C., U. S. Army, in France, during the World War; on the staff of the Union Hospital of Cecil County; aged 44; died suddenly, April 6.

Milton Jennea Longsworth, Lima, Ohio; University of Michigan Medical School, Ann Arbor, 1890; member of the Ohio State Medical Association; served in the M. C., U. S. Army, during the World War; aged 55; died, April 9, of rupture of the bladder.

Norman Lamont MacLachlan ✠ Findlay, Ohio; University of Michigan Medical School, Ann Arbor, 1878; on the staff of the City Hospital; aged 68; died, April 8, of injuries sustained when the automobile in which he was driving was struck by a street car.

Strickey Alvin Conrad ✠ Leetonia, Ohio; Ohio Medical University, Columbus, 1902; served in the M. C., U. S. Army, during the World War; aged 52; was killed, April 6, when the automobile in which he was driving was struck by a train.

James Douglas, Morristown, N. J.; New York University Medical College, New York, 1880; member of the Medical Society of New Jersey; on the staff of the Morristown Memorial Hospital; aged 79; died, April 14.

Walter Hans Schroeder, Farmington, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1916; member of the Missouri State Medical Association; aged 33; died, April 3.

Clifford Webster Stickney ✠ Holden, Mass.; New York University Medical College, New York, 1881; on the staff of the Holden District Hospital; aged 67; died, April 9, of cerebral hemorrhage.

John Louis Ireland, Erie, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1893; formerly president of the board of health of Erie; aged 53; died suddenly, April 11, of heart disease.

William M. Bailey, Detroit; Western Homeopathic College, Cleveland, 1868; formerly professor of gynecology and rectal surgery at the Detroit Homeopathic Medical College; aged 77; died, April 9.

John Andrew Linebaugh, Berkeley, Calif.; Starling Medical College, Columbus, 1890; aged 59; died, April 10, at the Lane Hospital, San Francisco, of bronchopneumonia and paralysis agitans.

Enos K. Lefever, Carlisle, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 55; died, March 27.

Edward Francis Duffy, Yonkers, N. Y.; Bellevue Hospital Medical College, New York, 1891; member of the Medical Society of the State of New York; aged 54; died, April 14.

Samuel Whitehall, Los Angeles; Eclectic Medical Institute, Cincinnati, 1868; University of Michigan Medical School, Ann Arbor, 1871; also a pharmacist; aged 75; died, April 6.

Clarence Wilbert O'Brien, Wyandotte, Mich.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1903; aged 45; died, February 15, of chronic nephritis.

Owen Kent Womack, Paris, Tenn.; Vanderbilt University Medical Department, Nashville, 1900; aged 50; died, March 31, of cardiac asthma and chronic nephritis.

Henry Gilbert Clippinger, Eau Claire, Mich.; Eclectic Medical College of Pennsylvania, Philadelphia, 1872; aged 79; died, March 29, of bronchopneumonia.

Herbert Rudolph Olson, Centerville, Iowa; State University of Iowa College of Medicine, Iowa City, 1919; aged 26; died, April 6, of pulmonary tuberculosis.

Harrie Eugene Smith ✠ Mount Vernon, N. Y.; New York University Medical College, New York, 1883; formerly city health officer; aged 63; died, April 17.

William Jules Augustine Vogt, Iowa City, State University of Iowa College of Medicine, 1881; aged 69; died, April 10, of carcinoma of the sigmoid flexure.

Patrick William O'Brien, Peekskill, N. Y.; Bellevue Hospital Medical College, New York, 1886; aged 60; died, April 15, of carcinoma of the intestine.

J. Brummel Jones, Higginsville, Mo.; St. Louis Medical College, St. Louis, 1868; aged 81; died, April 9, of bronchopneumonia, following influenza.

John Nathan Baughman, Evansville, Ind.; University of Louisville Medical Department, Louisville, Ky., 1875; aged 70; died, April 15, of paralysis.

Levi C. Wells, Cambridge, Ohio; Hahnemann Medical College and Hospital, Chicago, 1878; aged 76; died, March 11, of cerebral hemorrhage.

Edward Frank Jones, Indianapolis; Physio-Medical College of Indiana, Indianapolis, 1898; aged 61; died, April 8, of lobar pneumonia.

Maurice J. Quille, Jr. ✠ Chicago; American College of Medicine and Surgery, Chicago, 1905; aged 37; died, April 29, of septicemia.

Albert G. Pierce, Blytheville, Ark.; Tulane University of Louisiana School of Medicine, New Orleans, 1885; aged 63; died, April 5.

W. Buchanan Parsons, Missoula, Mont.; Bellevue Hospital Medical College, New York, 1870; aged 72; died, April 12, of paralysis.

Isaac W. Riggs, Pittsburgh; Western Reserve University School of Medicine, Cleveland, 1869; aged 76; died, April 9.

Sylvanus Jutkins Birch, Orange, Mass. (licensed, years of practice); aged 77; died suddenly, April 4, of senility.

Thomas T. K. Mitchell, Lawrenceville, Ga.; Medical College of Georgia, Augusta, 1857; aged 85; died, April 15.

✠ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

INTRAVENOUS THERAPY

Report of the Council on Pharmacy and Chemistry

For some years the Council has urged conservatism in the adoption of the intravenous method of administering drugs. It has been necessary to do this to offset the propaganda of proprietary firms that, for commercial purposes, feature the indiscriminate use of intravenous therapy. In order that the status of this form of drug administration might be presented to the profession and that it might be made clear under just what conditions the intravenous administration of drugs is warranted, the Council appointed a committee to study the subject and prepare a report for publication.

The report which follows was prepared by this committee and submitted to the Council. The Council has endorsed it and authorized its publication.

W. A. PUCKNER, Secretary.

The administration of drugs by the intravenous method is being extensively exploited by firms who are commercially interested in the sale of "intravenous specialties." Because of undue enthusiasm inculcated by advertising and publicity, and through lack of sound judgment, many physicians are employing it unwisely in conditions where this method of administration is not indicated. In addition to the broad general claims of superiority of intravenous injection over other methods of administration the following specific advantages are commonly urged in its favor.

1. That it affords precision of dosage.
2. That there is no irritation of the gastro-intestinal tract.
3. That the drug is not altered or destroyed in the gastro-intestinal tract.
4. That the drug enters the blood stream without loss of time.

There is a legitimate field for intravenous therapy. Nothing this Committee says on the subject in the report that follows is to be construed as a condemnation of the legitimate application of this method of administering drugs.

These alleged advantages in the routine administration of drugs are more apparent than real, and they will be considered in some detail, though not exhaustively.

1. PRECISION OF DOSAGE: An accurate definition of the word "dose" is necessary before proceeding to a discussion of the subject, because a number of meanings have been given to the word, and one must avoid confusing *precision in weighing and measuring* a drug, with *precision of dosage* of that substance. A physician administers a drug in order to induce a given effect. Obviously it is his desire to give the exact amount necessary to induce that effect—no more and no less. That amount is the dose of the substance for that patient, under the circumstances obtaining at that moment, and evidently it is not necessarily the exact dose of the drug for any other patient, or for that patient under other possible circumstances.

Since the physician never knows the exact dose of a drug until he has obtained the results sought, he chooses an amount arbitrarily, which he knows to be a fraction of the true therapeutic dose, and he administers this fraction repeatedly until the desired effects are obtained, that is, until the total therapeutic dose has been administered. This fraction, the weight or volume of which can be determined with precision, has come to be called "the dose" of the drug, and precision of weighing and measuring the fraction has come to be confused with precision of dosage.

The oral administration of a drug permits of the administration of as many fractions of the dose as the circumstances demand, and these vary with the susceptibility of the patient, the urgency of the case, and the dangers of overdosage. The intravenous injection of a drug, however, owing to the limitations inseparable from this mode of administration practically makes it imperative to give the whole of the calculated therapeutic dose at once, except in the few cases which demand almost constant attendance by the physician. If this calculated dose proves insufficient, the patient suffers for want of the drug; if it happens to be more than the true therapeutic dose the patient suffers the toxic effects proportional to error in the estimate, and the effects of overdosage are more severe following intravenous injection than after oral administration.

Drugs are absorbed from the gastro-intestinal tract at somewhat variable rates, but there is a fair degree of uniformity of absorption for a given drug. On the other hand, different individuals show greater differences in their reactions to a given drug, that is, greater tolerance or resistance. There is a greater probability that the intravenous dose will be too large or too small, than that the patient will show an essential departure from the rule with reference to absorption from the gastro-intestinal tract.

It is generally recognized, for example, that there is a greater danger in the intravenous injection of strophanthin than there is in the oral administration of digitalis, and a number of deaths have followed the intravenous injection of the exact "calculated dose" of strophanthin. One is justified in administering strophanthin intravenously only when the exigencies of the case demand prompt relief, even though it involves some risk.

A further analogy: Anesthesia is maintained conveniently by dropping choloroform on to a face mask and permitting the patient to inhale the vapor, though there is no constant ratio between the amounts used and those taken into the blood stream. In other words, the dose of chloroform—that is the amount required to maintain the desired depth of anesthesia—is administered in almost innumerable fractions, though the anesthetist does not know the percentage of any of these fractions that is absorbed. This fractional dosage by inhalation is strictly comparable to fractional dosage by oral administration when strychnin or another drug is used.

2. THAT THERE IS NO IRRITATION OF THE GASTRO-INTESTINAL TRACT: Many drugs cause disturbances of the gastro-intestinal tract which are carelessly termed "irritation" though the action may be due to a reflex from another organ. An example is the nausea and vomiting induced by digitalis bodies through their direct action on the heart. It is obvious that the intravenous injection of such drugs does not cause less disturbance of the gastro-intestinal tract than their oral administration. Much of the true irritation of the large intestine following the administration of metallic salts, such as those of mercury, is caused during their excretion, and this also is largely independent of their mode of administration. Drugs that are directly irritant to the gastro-intestinal tract are usually irritant to the veins, the heart, and to other organs with which they come in contact in greater concentration after intravenous injection than after oral administration, hence, there are even greater objections to the intravenous injection of irritant drugs than to their oral administration.

3. THAT INTRAVENOUS INJECTION PREVENTS ALTERATION OR DESTRUCTION OF THE DRUG IN THE GASTRO-INTESTINAL TRACT: Nearly all drugs which are used for their systemic effects are absorbed fairly rapidly from the gastro-intestinal tract, and with a little judgment the physician can choose a drug which is absorbed promptly. The liver is far more active in the destruction of most drugs than is the gastro-intestinal tract, and drugs reach the liver quite as readily when injected intravenously as they do when given by mouth. The liver seldom takes all of a drug out of the blood which passes through it once, but this is usually taken up in small increments and slowly destroyed. There are, it is true, drugs such as epinephrin and arsphenamine that are not suited for oral administration. This is no argument, however, for administering, say, sodium iodid, intravenously, simply because epinephrin is destroyed in the stomach.

4. DRUGS ACT MORE PROMPTLY AFTER INTRAVENOUS INJECTION: This advantage in extreme cases does not admit of

discussion, but it is obvious that it is not of the slightest importance in the treatment of chronic conditions, or with drugs such as mercurials, iron, and iodids, which induce their therapeutic effects slowly even when they are injected intravenously. It is a mere shibboleth as it is commonly used, which holds the attention of the unthinking through the frequency of its repetition.

This Committee would point out again that it has no desire to discredit the rational use of drugs by intravenous injection, but, on the contrary, it seeks to avoid the accidents and disappointments that must follow the abuse of a method which rightly employed may be a life-saving measure. With increasing knowledge of the technic of using drugs, with the development of pharmacology it seems probable that intravenous injections will be limited to even fewer classes of drugs than at present.

The Committee recommends that the Council (1) place itself on record as opposing the reckless and indiscriminate use of drugs by intravenous injection with its attendant dangers and increased needless expense to the patient, and, (2) recognize the legitimate life-saving nature of intravenous administration of drugs in extreme cases.

The Committee holds that the indiscriminate use of the intravenous method in cases in which it is not necessary is as reprehensible as it would be to jeopardize the life of the patient and subject him to the inconvenience and expense of an unnecessary major surgical operation.

Correspondence

INFORMATION DESIRED FROM TEACHERS OF PHYSICAL THERAPEUTICS

To the Editor:—This is offered in the hope of getting information on certain points from those who teach physical therapeutics, with the object of coming to some agreement as to what subjects shall be presented, the principles that shall govern, the clinical conditions for which they are best adapted, what forces, agencies, devices, instrumentalities, etc., shall be employed or recommended, and the methods of presentation.

I could wish for replies to include a description of organization of clinics, personnel, equipment, etc., and, in particular, how, on what basis, cooperation is obtained with other clinics.

I then propose to correlate and integrate the answers and to submit later a proposition to the end that we may get together in the best interests of clinical medicine. By such means we—all clinicians—should facilitate the emergence of a uniformity of aim and procedure.

J. MADISON TAYLOR, M.D., Philadelphia.
Professor of Physical Therapeutics and Dietetics, Temple University Department of Medicine.

"THE CONTROL OF TRACHOMA"

To the Editor:—In the editorial comment, April 21, I was disappointed in finding no reference to the more recent conceptions of the etiology of trachoma, when the citation of the Minnesota investigation made it particularly apropos. These are, briefly, that, if trachoma is a disease entity, its spread may be better explained by an intermediary host than by interhuman contact (*Am. J. Ophth.*, September, 1922, p. 766), or that it is not a disease entity and may be developed from any infection (ibid., October, 1922, p. 799). Further study along these lines will have to be made before a decision can be reached, but the facts recorded, through observations for many years, are rather subversive of contagion in the ordinary sense; and the Minnesota returns add emphasis to this, unless the two races mingle there to a greater extent than in other states.

H. B. YOUNG, M.D., Burlington, Iowa.

To the Editor:—In further reference to the prevalence of trachoma in the United States, I will say that I examined 7,000 troops at Camp MacArthur, Texas, in 1918, among whom I found fifty well developed cases of this disease. I might add that these men were from Missouri and Texas, and the probabilities are that the average is a little high, trachoma being prevalent in the Ozark region of Missouri.

ORLYN S. PHILLIPS, M.D., Baker, Ore.

STATISTICS ON CANCER AT ALGIERS

To the Editor:—The government of Algeria recently published an interesting report of the mortality of the city of Algiers which includes some exceptionally valuable statistics on cancer. The report is the work of Dr. Lemaire and covers the period 1914-1921, inclusive. The cancer statistics are given in the accompanying table.

Mortality from Cancer in Algiers

	Rates per 100,000			
	European	Native	Total	Actual Deaths
1914	64.3	12.5	54.0	108
1915	57.5	15.0	57.0	114
1916	48.7	12.5	41.5	83
1917	54.3	5.0	45.1	89
1918	56.3	5.0	46.0	92
1919	55.6	7.5	46.0	92
1920	58.7	12.5	49.5	99
1921	66.7	6.2	42.2	87

I may add to the foregoing that the European population of Algiers is estimated at 147,986, while the native population is given as 47,669.

FREDERICK L. HOFFMAN, Newark, N. J.

"A SECOND INITIAL LESION IN SYPHILIS ONE YEAR AFTER THE FIRST"

To the Editor:—I have read with interest the report of Drs. W. C. and A. A. Nichols in THE JOURNAL, March 24, p. 843. It seems to me that this, while seemingly an authentic case of a second infection, is merely a recurrence of the first infection. The lesion that appeared in the mouth was a mucous patch, and was indurated because it was cauterized. Every observer knows how abundantly the spirochetes are found in the secondary lesions of the mouth. According to modern teachings, the entire treatment at the time of the appearance of the so-called "second chancre" was inadequate. It takes much more treatment with both arsphenamin and mercury to cure an infection such as is reported by the authors; at least this has been my experience.

B. C. CORBUS, M.D., Chicago.

To the Editor:—In the case report by Drs. W. C. and A. A. Nichols, I take it, from the authors' conception of this case, that the patient, not having had sufficient treatment in the first year, developed the second initial lesion, because he still harbored the virus which had caused the first penile chancre. While multiple hard chancres, either in the same region or even in remote places, have been described—and I myself have seen such cases appear within a few weeks—it seems to me improbable that such an occurrence could take place an entire year afterward, when the infection had become generalized. I would be inclined to explain the second initial lesion as a so-called pseudo-ulcus durum, which can be explained by the fact that one of the mucous membrane

lesions, which had existed during the early secondary stage, became reinactivated by the aggression of a new attack of spirochetes, thereby assuming the hardness and clinical appearance of an ulcus durum.

ADOLPH ROSTENBERG, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DIAGNOSIS OF RABIES

To the Editor:—A man, aged 25, who had been in good health, came to me for advice, February 16, stating that exactly three weeks previously a dog owned by him died; for one week previous to the death of the dog the patient had been bitten at least six different times by the dog; he had given the wounds no treatment of any kind. February 16, he became worried for fear the dog might have been rabid. I advised sending the head in for diagnosis, which was possible, for the weather had been severely cold during the three weeks. A diagnosis of rabies was made, and antirabic vaccine treatment was started, February 22, twenty-eight days after the death of the dog, or about thirty-four or thirty-five days from the time he was first bitten.

Treatment was completed, March 12, and the patient continued in good health until March 20, when he complained of a tingling sensation in his right hand and arm. May 21, this continued, and to the tingling sensation was added severe pain. He also on this date had a temperature of 101. No other physical findings could be made out. On the evening of March 22, the pupillary reflex of the right eye was absent and the pupil remained in contraction, though not pin-point. March 23, there was partial paralysis of the orbital muscles of the right eye, so that the movements of the ball could not be controlled accurately. Throughout this day a rapid and descending paralysis of the muscles of deglutition was evident; the right arm became partially paralyzed. The patient had lengthening attacks of extreme tachycardia, and died early on the 24th of paralysis of the cardiac center.

During the time of the active symptoms, my therapy consisted of the use of sedatives: mild sedatives at first, and finally morphin and chloroform. 1. Did I omit any therapeutic agent that would have been of benefit to the patient? 2. Is there an antitoxin or any other agent that I might have given intraspinally that would have been of benefit to him? I am asking these questions simply for my own information and for the benefit of my own knowledge. M.D., Idaho.

ANSWER.—1. In this case there seems to be no room for any doubt that the patient died of rabies. As the patient came under treatment thirty-four or thirty-five days after he was bitten by the dog, it is not at all surprising that the treatment failed.

2. It does not appear that there was anything omitted in this case that would have been of benefit. There is no antitoxin or other form of antiserum known which, given intraspinally or otherwise, would have had any effect on the course of the disease.

REMOVAL OF BILE FROM URINE

To the Editor:—In THE JOURNAL, Aug. 6, 1921, p. 462, Burwell and Jones stated that bile can be removed from the urine by mixing it with an equal volume of saturated alcoholic zinc acetate solution. We have had occasion to carry out the procedure on many bile-containing urines, but have never found that it effectively removes the bile pigments. Would you kindly make a statement to this effect.

M.D., New York.

ANSWER.—Burwell and Jones, in performing the phenolsulphonephthalein test of renal function, collect the urine as usual, two hours and ten minutes after the injection of phenolsulphonephthalein, and dilute the specimen to 500 c.c. To 20 c.c. of this diluted urine is added 20 c.c. of a saturated alcoholic solution of zinc acetate, which, they state, will precipitate out the bilirubin and hemoglobin, carrying down the red blood cells with the precipitate formed. The precipitation of bilirubin by zinc salts has been known for a long time, and the method has been frequently employed. In the filtrate from this precipitation there is no reaction for bile when the iodin test is applied, nor is there any reaction for blood pigments as shown by the spectroscopic test. While this iodin test is not very sensitive, indicating only one part of biliary pigment in 10,000 of urine, yet if the filtrate shows no reaction with this test it is certainly evidence that sufficient bile has been removed to prevent interference in the latter colorimetric tests of the phenolsulphonephthalein output, which was the point claimed by the authors.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, May 8-9. Sec., Dr. J. W. Walker, Fayetteville.
DELAWARE: Wilmington, June 19-21. Sec., Dr. P. S. Downs, Dover.
FLORIDA: Daytona Beach, June 11-12. Sec., Dr. W. M. Rowlett, Tampa.
GEORGIA: Atlanta, June 6-8. Sec., Dr. C. T. Nolan, Marietta.
ILLINOIS: Chicago, June 18. Supt., Mr. V. C. Michels, Springfield.
IOWA: Iowa City, May 31-June 2. Sec., Dr. Rodney P. Fagen, Capitol Bldg., Des Moines.
KANSAS: Kansas City, June 19. Sec., Dr. Albert S. Ross, Sabetha.
KENTUCKY: Louisville, June 12. Sec., Dr. A. T. McCormack, State Board of Health Bldg., Louisville.
MASSACHUSETTS: Boston, May 8-10. Sec., Dr. Charles E. Prior, State House, Boston.
MICHIGAN: Ann Arbor, June 12. Sec., Dr. Beverly D. Harison, 601 Stroh Bldg., Detroit.
MINNESOTA: Minneapolis, June 5-7. Sec., Dr. Thomas McDavitt, Lowry Bldg., St. Paul.
MISSISSIPPI: Jackson, June 19-20. Sec., Dr. W. S. Leathers, University.
NATIONAL BOARD OF MEDICAL EXAMINERS: Written examinations in Class A medical schools. Parts I and II, June 25-27, and June 28-29. Parts I and II, September 24-26, and September 27-28. Secretary, Dr. John S. Rodman, 1310 Medical Arts Bldg., Philadelphia. Application for these examinations must be made on or before May 15.
NEBRASKA: Lincoln, June 6-8. Sec., Mr. H. H. Antles, State House, Lincoln.
NEW JERSEY: Trenton, June 19-20. Sec., Dr. Alexander MacAlister, State House, Trenton.
OHIO: Columbus, June 5-8. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.
TEXAS: Austin, June 19-21. Sec., Dr. T. J. Crowe, Dallas County Bank Bldg.
VERMONT: Burlington, June 20-22. Sec., Dr. W. Scott Nay, Underhill.
VIRGINIA: Richmond, June 19-22. Sec., Dr. J. W. Preston, 720 Anchor Bldg., Roancke.
WASHINGTON: Seattle, June 19. Sec., Mr. Wm. Melville, Olympia.

REPORT OF COMMITTEE ON GRADUATE TRAINING IN OTOLARYNGOLOGY*

GEORGE E. SHAMBAUGH, M.D., SECRETARY

In a previous report on the minimum requirements essential in the preparation for special practice in otolaryngology (Graduate Training in Otolaryngology[1]), this committee recommended that a period of one full year be spent in securing a proper foundation for this work; that one half of this time be devoted to the study of the fundamental sciences in the laboratory of a university, and that the other half be devoted to the clinical study of cases, all of this work to be on the basis of real graduate training, in which the student does his work independently but under proper supervision, as distinguished from listening to didactic lectures or by attendance on clinics, watching others do the work. It was further stipulated that this first year's training be supplemented, so far as facilities exist, by serving as intern in hospitals devoted to the specialty or as resident in otolaryngology in a general hospital, and that when it is not feasible to secure such services, an additional six months be spent in a continuation of the first year's work or by serving as assistant in the practice of an established specialist. This additional six months may be spent by taking such special courses in otolaryngology as are offered in other medical centers, postgraduate schools, etc.

In order to avoid confusion regarding this minimum requirement and what should be contemplated in a fully

* The members of this committee are: Wendell C. Phillips, M.D., New York, Chairman; Herbert Stanley Birkett, M.D., dean and professor of otolaryngology, McGill University Faculty of Medicine, Montreal; Eugene A. Crockett, M.D., Walter A. Lecompte, professor of otology, Medical School of Harvard University, Boston; Lee Wallace Dean, M.D., dean and professor of ophthalmology, otology and laryngology and oral surgery, State University of Iowa College of Medicine, Iowa City; John Marvin Ingersoll, M.D., associate professor of otology, rhinology and laryngology, Western Reserve University School of Medicine, Cleveland; Hanau W. Loeb, M.D., dean and professor of ear, nose and throat diseases, St. Louis University School of Medicine, St. Louis; John O. McReynolds, M.D., Dallas, Texas; David J. Gibb Wishart, M.D., professor of otolaryngology, University of Toronto Faculty of Medicine, Toronto; secretary, George Elmer Shambaugh, M.D., professor of laryngology and otology, Rush Medical College, Chicago.

1. A. M. A. Bull., Jan. 15, 1921.

rounded out preparation, we submit the following summary of a report from the Committee on Graduate Training appointed by the three special societies, the American Laryngological Association, the American Otological Society and the American Laryngological, Otological and Rhinological Society.

SUMMARY OF REPORT

1. We recommend that students preparing for the practice of otolaryngology be graduates of Class A medical schools and have completed a year's service as intern in an approved general hospital or its equivalent.

2. We recommend that, when possible, the preparation for special practice be started immediately after completion of this hospital year. We do not approve of specialization beginning during the undergraduate medical course, or in the intern year.

3. We recommend that the minimum training consist of eighteen months full-time work, the first year to be spent in one place. The last six months may be continued here or the work may be pursued in other approved centers. During the first year, one half of the time should be devoted to the clinical study of cases, the other half to the study of the fundamental sciences and to library work.

4. All of this work must be on the basis of genuine graduate instruction in which the student does his work individually under proper supervision.

5. The work in the fundamental sciences should be done in properly equipped laboratories, such as exist in all Class A medical schools. The clinical work must be done in a properly equipped and properly organized outpatient department of either a Class A school or a special hospital, the student serving as clinical assistant.

6. On the completion of the first year's fundamental training, the student is advised to secure so far as this is possible the position of intern in a special hospital, or of resident in otolaryngology in a general hospital.

7. For those students who are not able to secure suitable hospital positions after the completion of the first year's fundamental training, the remaining six months' work necessary to fill out the eighteen months' minimum requirement may be taken as continuation of the first year's work in the same institution or by taking special work in other centers. Others may devote the last six months serving as assistant in the practice of some established specialist. When the latter alternatives are followed, the work selected must meet the approval of the institution in which the first year's work has been taken.

8. We recommend that on the completion of the foregoing requirements the student be granted a suitable certificate seting forth that he has had the proper preparation for taking up the practice of the specialty. This certificate is to be granted by the institution in which the first year's work has been taken. We make no recommendation regarding the granting of higher degrees. We feel satisfied that such degrees will be granted as readily by the university to those students preparing for the practice of otolaryngology as to students in any other field, whenever the work pursued meets the requirements established for the granting of such degrees.

9. We recommend that the student in otolaryngology devote three years, if possible, to the study of his specialty.

The committee hopes to be able to assist the candidates in the following ways:

(a) Securing from the graduate departments of the universities a suitable degree to be conferred only on such candidates as have followed the course outlined above.

(b) By correspondence with the graduate departments of the universities with a view to securing a uniformity in the course of study to be pursued.

(c) By arranging with the hospitals referred to above to limit their appointments, as interns, to those candidates possessing qualifications as outlined in the preceding.

(d) By preparing a list of hospitals to which candidates may safely be recommended to apply for the position of intern.

(e) By securing reliable information as to the facilities offered by various centers, which they may place at the disposal of those who desire to perfect themselves still further in any department of otolaryngology, after the foregoing course has been concluded.

FACILITIES FOR SECURING SPECIAL TRAINING IN OTOLARYNGOLOGY

In the present report we are making a partial survey of the facilities existing in this country for securing special training in otolaryngology. Our aim has been to include in this statement only such facilities as would constitute a part of the requirement preparatory for special practice as stipulated in our previous report. It is the belief of the committee that the publication in THE JOURNAL of these data, supplemented from time to time as other data are received, will be of great assistance for those seeking proper preparation for special practice.

Facilities for graduate training in otolaryngology have developed along three lines: (1) by serving as assistant in the work of outpatient departments; (2) by serving as intern in special hospitals or as resident in otolaryngology in general hospitals; (3) by taking courses, didactic, clinical and operative, such as are offered for the most part in postgraduate schools. The most substantial progress in graduate training so far developed in this country has been in connection with hospital services. The shortcomings inherent in such preparation have been pointed out in our previous report. It is the belief of this committee that these hospital services should logically follow a year spent in such fundamental training as can best be secured by serving for a suitable period as assistant in a properly equipped and properly organized outpatient department. Hospital work in otolaryngology has to do almost exclusively with operative cases, and for the most part with the exceptional more serious complications. The student who relies mainly on hospital experience for his training is left more or less deficient in the more important and certainly most difficult part of such preparation, namely, in the training for making proper, routine examinations, in the diagnosis of cases, and especially in learning how to recognize the proper indications for surgical interference. Proficiency in operative technic, when not supplemented by this fundamental training in examination and diagnosis, is sure to lead to indiscriminate and unnecessary surgery. It is always more difficult to teach a student how to recognize the proper indications for operations than it is to teach him the technic of the operation.

Hospitals with Services for Interns or Residents in Otolaryngology

Institution	Address	Length of Service	Number of Places	Character of Service
Illinois:				
Cook County Hospital	Chicago	1 year	1	Resident
Illinois Charitable Eye and Ear Infirmary	Chicago	16 months	8	Interns
North Chicago Hospital	Chicago	2 years	4	Residents
Presbyterian Hospital	Chicago	1 year	1	Resident
Rush Medical College	Chicago	1 year	8	Externs (O.P.D.)
St. Luke's Hospital	Chicago	1 year	1	Resident
Iowa:				
State University of Iowa	Iowa City	2 years	8	Residents
Louisiana:				
Eye Ear, Nose and Throat Hospital	New Orleans	1 year	5	Interns
Massachusetts:				
Boston City Hospital	Boston	18 months	3	Interns
Massachusetts Eye and Ear Infirmary and Mass. General Hospital	Boston	20 months	5	Interns
Michigan:				
State Univ. of Michigan	Ann Arbor	4 years	4	Interns
Detroit Eye, Ear, Nose and Throat Hospital	Detroit	1 year	1	Intern
Harper Hospital	Detroit	1 and 2 yrs.	1	Resident
Minnesota:				
Mayo Clinic	Rochester	39 months	6	Residents
New York:				
Brooklyn Eye and Ear Hospital	Brooklyn	21 months	5	Interns
Methodist Episcopal Hosp.	Brooklyn	2 years	4	Interns
Bellevue Hospital	New York	1 year		Interns
Beth Israel Hospital	New York	6-18 mos.		Interns
Broux Eye and Ear Hosp.	New York	1 year	1	Intern
Harlem Eye and Ear Hosp.	New York	18 months	2	Interns
Manhattan Eye, Ear and Throat Hospital	New York	18 months	6	Interns
Mount Sinai Hospital	New York	2 years	2	Interns
New York Eye and Ear Infirmary	New York	18 months	6	Interns
New York Post-Graduate Hospital	New York	2 years	5	Interns
New York Throat, Nose and Lung Hospital	New York	6 mos.-1 yr.	2	Interns
St. Luke's Hospital	New York	18 months	3	Interns
Ohio:				
Western Reserve Univ.	Cleveland	1 year	2	Residents (O.P.D.)
Canada:				
Montreal General Hosp.	Montreal	1 year	1	Resident
Royal Victoria Hospital	Montreal	2 years	2	Interns
Toronto General Hospital	Toronto	16 months	2	Residents

It is the belief of this committee that the most conspicuous defect in our facilities for providing proper training in otolaryngology will be met by a proper development of the educational function of the outpatient department. This development of the teaching function, when properly supervised, enhances as nothing can the character of the service rendered the patient. It has become generally recognized that in hospital work the best care of patients is usually found in those hospitals in which the teaching function has been fully developed. In exactly the same way the outpatient

department which is connected with an educational institution and in which the teaching function has been properly developed is capable of rendering the best service to the patient.

The material of the outpatient clinic is the ideal material for providing training in examination, history taking and diagnosis, so essential in the proper preparation for special practice. The reason this wealth of material has not been more generally utilized for teaching purposes is to be found in the more or less generally neglected state of outpatient clinics in this country. In order to make of the outpatient clinic the ideal training school for those preparing for special practice, something of the same care must be devoted to this department as is given to hospital work. This means, first of all, providing the outpatient clinic with a complete, and, as nearly as possible, ideal sanitary equipment in order that the work may be taken care of in the best possible manner. It means, moreover, the introduction in the outpatient clinic of a suitable corps of graduate students serving as clinical assistants. The service of these graduate students is as essential for the care of the outpatient as is that of interns in hospital work. Their work should, of course, be given the same supervision as does that of the intern in our best managed hospitals. Careful examinations and complete history taking is just as essential in the proper handling of the outpatient as it is in hospital work. The number of graduate students receiving this training in any institution will be determined exactly as is the number of interns in a hospital, that is, by the number which is essential to take proper care of the patients. The committee believes that the graduate students who receive appointments in the outpatient clinics should be expected to pay a suitable fee for this training.

There are already in this country a number of institutions in which the educational function of the outpatient department has been developed to the extent of providing a definite service for graduate students. In some, this work in the outpatient clinic is carried on in connection with regular intern or resident services. Positions of this sort are available, for example, at Ann Arbor, where services exist for four graduate assistants; at Iowa City, with places for eight; at Rochester, for six men; at Rush College, for eight men, and at Western Reserve in Cleveland, for two clinical assistants. It is our belief that with very little additional expense it would be possible for the majority of our Class A medical schools to provide a similar service each for a small corps of graduate students in otolaryngology. If but twenty-five of our leading Class A medical schools would provide services for an average of four men each year, the entire need for specialists in otolaryngology for this country would be provided for.

As regards the work offered to graduate students in the form of didactic lectures, clinics, operative courses, etc.: This has been developed particularly in the postgraduate schools. Some of this work is excellent, being given by competent men with experience as teachers. As already pointed out in our previous report, the logical field for such work is as review courses for men already established in special practice, and for those who have completed the one year in fundamental training outlined above. The objection frequently urged against the work of these postgraduate schools has been due to the practice of substituting this sort of work for that training which the student can acquire only by serving as clinical assistant where he is permitted to do the actual work himself. The facilities of postgraduate schools should be open freely for men completing their first year's work and who come to these institutions with the desire to select such short courses as they feel would round out their preparation. It is our belief that a sojourn of only a few weeks in several medical centers after the completion of the first year's work would have a distinctly broadening influence.

We present with this report such a list of hospital services for interns or residents in otolaryngology as we have been able to compile. We recommend that prospective graduate students in otolaryngology communicate direct with the Class A medical schools for information regarding facilities for serving as clinical assistants in outpatient departments. Information regarding the courses available in postgraduate schools may be obtained by communicating with such schools.

The committee strongly urges that the work of such interns receive careful direction, particularly as regards outside reading, and that these interns be encouraged to pursue, as part of their regular duties, the exhaustive study of interesting cases, combining this with a complete review of the literature relating to such conditions, and that a carefully prepared report of such work be submitted as a thesis on the completion of their service. The committee regards the preparation of such a thesis with the training in library work which it involves as essential in the proper preparation of every real specialist.

Medical Economics and Miscellany

NARCOTIC CONTROL IN THE STATE OF WASHINGTON

To prevent the abuse of narcotic drugs in the state of Washington, the legislature has enacted a law covering the production, manufacture and distribution of habit-forming drugs and providing for the control of the addict. In general, the law follows the lines of the Harrison Narcotic Law. It goes further, however, in that it covers alpha and beta eucain, cannabis americana and cannabis indica. No one but a physician regularly licensed to practice medicine and surgery may prescribe any narcotic drug. The patient's ailment must be stated on the prescription, and the person procuring the drug to be prescribed must place his signature and address on the back of the prescription. The dispenser must make a copy of the prescription and preserve it, except that the copy may be removed by any prosecuting attorney or peace officer, any representative of the department of licenses, or any deputy or inspector of the state department of agriculture, all of whom may inspect such records. A person violating the provisions of the law relating to the production, manufacture and distribution of narcotic drugs is guilty of a felony, and on conviction is to be punished by imprisonment in the state penitentiary for not less than one year nor more than ten years. If the person convicted is a pharmacist, dentist, physician or veterinarian, his certificate of registration is to be revoked, and he is ineligible for reregistration for a period of ten years from and after the date of the revocation.

Every person who habitually uses any narcotic drug is guilty of a gross misdemeanor. Any state, county and municipal health officer, or his authorized deputy who is a licensed physician, may, whenever in his judgment it is necessary to protect the public safety, health and morals, examine any person reasonably suspected of habitually using narcotic drugs, and require such persons as he reasonably suspects to be drug addicts to report for treatment to an approved physician and to continue treatment at their own expense, or to submit to treatment at public expense until cured. The state board of health is empowered to determine by general regulation that the quarantine or isolation of persons habitually using narcotic drugs is necessary; and if it so determines, the officers named above may then isolate or quarantine such persons. Any person so isolated or quarantined may within ten days thereafter appeal to the superior court of the county; but, pending appeal, he is to be held in quarantine, and the judgment of the superior court is final. Persons who have been cured may be paroled or discharged by the health officer. Any person believing himself cured may appeal to the health officer for discharge, and on adverse decision may appeal to the circuit court for release; but such appeal shall not lie until after the addict has been in quarantine for a period of at least six months. Licensed physicians treating narcotic addicts are required, on the beginning of treatment, to report the case to the health officer. The state board of health may establish quarantine stations and clinics for the detention and treatment of addicts, which may be in connec-

tion with any county or city jail, or any hospital or other public or private institution having, or which may be provided with, necessary detention, segregation, isolation clinical and hospital facilities as may be required and prescribed by the board.

STATE OF WASHINGTON YIELDS TO SHEPPARD-TOWNER MATERNITY LAW

The legislature of the state of Washington has accepted the terms and conditions of the Sheppard-Towner Maternity Law, and has created in the state department of health a division to be known as the division of child hygiene, through which the provisions of the law are to be administered. Ten thousand dollars has been appropriated from the treasury to meet the requirements of the federal act.

VALUE OF CHEESE IN THE DIET

In the making of cheese, the greatest part of the casein and fat is brought down in the curdling process, leaving behind in the whey the milk, sugar and albumin. Most of the mineral substances go into the cheese. The three most important constituents, viz., the calcium, phosphates and the iron, are lost only to a small extent. Since the cheese is rich in fat, fat soluble A, or the growth vitamin, is retained almost completely in the cheese. The vitamins B and C are also retained, but to a smaller extent, which has never been exactly determined. It is clear, therefore, that whatever is said about the nutritive value of milk is to a great extent also true of cheese, because the most important constituents are retained to a very remarkable degree. As a matter of fact, being the more concentrated food, cheese enhances several fold some of the benefits derived from a milk diet. The American diet is likely to be made up chiefly of the grains and meat products. Both of these foods are known to be deficient in calcium. Indeed, it may well be said that the deficiency in calcium is the big gap in the American diet today, and it is primarily in this connection that cheese becomes an essential factor, because cheese contains a combination of calcium and phosphorus in greater proportion than in any other food, organically combined with the casein in such a way as to make it readily available. Although bread and meat may be a balanced ration from the standpoint of supplying carbohydrates and protein, it is decidedly deficient and unbalanced from the standpoint of supplying the mineral constituents. The best way to stabilize this inequality is to increase the amount of cheese and milk consumed. Concerning the digestibility of cheese, a wrong conception has been prevalent. Cheese, being a food in which the protein is closely intermingled with fat, remains a little longer in the stomach than is the case with other foods, and gives a sensation of fulness and heartiness. In the intestine, cheese is digested very quickly. Cheese, ingested together with other foods, has a marked influence in increasing the digestibility of the entire meal. The English and Scandinavians, who use many times over the amount of cheese that we do, are not troubled with as much constipation as are Americans. The number of calories that cheese furnishes per pound is quite variable depending on the cheese in question. Hard American Cheddar cheese will furnish as much as 1,900 calories a pound. When compared with other foods, cheese yields a lesser number of calories to the pound than some of the grain products, but considerably more than lean beef, fish, etc. Cheese must necessarily be considered an important food in the diet from any one of the factors considered. It would, however, be of greater value in special cases, for instance, in growing children who are in great need of calcium, phosphorus and the growth-promoting vitamin A. Cheese is especially rich in all of these factors, and the intelligent mother should see that her growing boys and girls have at least 1 ounce of cheese a day, either in the raw form or, better still, combined with vegetables in a salad.—S. K. Robinson, *American Food Journal* **18**:117 (March) 1923.

Book Notices

KIRKE'S HANDBOOK OF PHYSIOLOGY. Revised and Rewritten by Charles Wilson Greene, A.M., Ph.D., Professor of Physiology and Pharmacology, University of Missouri. Tenth edition. Cloth. Price, $5. Pp. 820, with 524 illustrations. New York: William Wood & Co., 1922.

This revision of Kirke's handbook is in no way superior to the ninth. Practically none of the defects of the previous edition have been eliminated, although the author says that revisions and amplifications have been made throughout the text. Judging from the preface, the handbook is intended for use by medical students. It is entirely inadequate for the purpose. Too much space is given to histology and physiologic chemistry, which the student either knows or knows where to find. The clinical application of physiology is not stressed, and the student is liable to treat this all-important subject the way he treats premedical zoology—as something prescribed but of no value to him. The space given to the various topics is entirely out of proportion to their recognized importance or unimportance. No more than five or six references to the original literature are given in the entire book. On the whole, however, the chapters on the blood, circulation, respiration, secretion, digestion and excretion are fairly well written. The chapter on metabolism is poor. The importance of the beta-carbon in the oxidation of fats is not mentioned. All types of glycemia and glycosuria get half a page of text. In speaking of measuring the basal metabolic rate, the author says: "The rate of heat production and of heat loss must, of course, be in balance in an animal of constant temperature, as in man. For this reason the rate of metabolism varies not with the mass, as we would expect, but with the surface area." Who could resist an argument like this? Very little space is given to vitamins. Fat-soluble A gets only eight lines of text (rickets is not even mentioned), whereas six full pages are devoted to the histology of the teeth. The treatment of the physiology of the ductless glands is even worse. The author persists in maintaining that "the parathyroids are intimately associated with the thyroids in the construction of the thyroid compound"; and that (Stewart's work notwithstanding) the medulla of the suprarenals, and not the cortex, is essential for life. Nerve-muscle physiology is treated more adequately, but its application in practice, the reaction of degeneration, is dismissed in two lines, and the nature of the reaction is not stated. However, thirteen pages are given to the histology of muscle and of the nerve fiber. The physiology of the central nervous system is not treated in the light of the newer knowledge. Sherrington's work on the spinal reflexes is not described. The knee-jerk is mentioned, but its importance as a diagnostic sign is not emphasized. A good deal of histology and anatomy of the brain is given, but the whole subject of aphasia gets less than four lines. In vain one looks for such common terms as ataxia, Brown-Séquard's syndrome, reciprocal innervation or decerebrate rigidity. The chapter on the eye has not been changed at all. Color-blindness is described, but its practical importance is overlooked. The confusing terminology as regards ophthalmoscopy and retinoscopy is retained; and since the word diopter is not even mentioned, the advice that the student fit glasses for himself and at least two others must be given in a Pickwickian sense only.

PHYSIOLOGY FOR DENTAL STUDENTS. By A. G. Curzon-Miller, B.Sc., L.M.S.S.A., F.C.S. Cloth. Price, $3.75 net. Pp. 206, with 81 illustrations. New York: Longmans, Green & Co., 1922.

The author states that the importance of physiology cannot be overstated, but that the needs of the dental student are not so comprehensive as those of the medical student. This immediately opens a large question, and a review of this little book really involves a consideration of the whole problem of professional education. With new courses being added, and old ones either lengthened or intensified on account of new material, it is becoming a problem indeed to determine at what point to begin paring. Physiology is a complex subject, and a course put on a fully scientific basis would involve a technical consideration of the structure,

physics and chemistry of the body. There is no course in the curriculum that is so liable to overlapping as physiology, reaching on the one hand into the pure sciences, and on the other into the chemical side. This makes a course in physiology easily susceptible to abridgement, so that we may present a discussion of physiologic phenomena to those who have little more than the layman's scientific attainments. But the dental student, having had courses in anatomy, and in organic and physiologic chemistry which approximate the time that the medical student is allotted, and who in turn gives 60 per cent. of the equivalent time to physiology, needs no special textbook. The author has been obliged, for the sake of brevity, to make incomplete statements which, to the beginning student of physiology, amount to inaccuracies. In general, shortening a textbook or a course should be by elimination and not by condensation of the material presented. Speculative discussions have been intentionally omitted, and as a consequence many valuable statements, bald and undecorated, pass unseen. A simple statement is not impressive; the student must be informed of the essential facts and the reasons for our conclusions if he is to remember them. This work is so dogmatic that the laboratory could play no part in the presentation of a course from it. One of the functions that the laboratory performs for the future clinician is to place him in an investigative frame of mind, and to teach him the principles involved in valuable research, in order that he may think originally in his clinical practice, giving intelligent consideration to new problems as they arise. He should be informed as to the live issues and trend of development, or he will become a victim of dogmatism and tradition. Further, too much space has been given to histology, which is irrelevant to the material as presented, and it would have been better if the chapter on development had been left for presentation in the department of microscopic anatomy. Diagrams, such as those of the vomiting mechanism, regulation of the respiratory mechanism, cardio-inhibitory center and vasomotor center, require extended explanation for complete understanding.

GETTING READY TO BE A MOTHER. A Little Book of Information and Advice for the Young Woman Who is Looking Forward to Motherhood. By Carolyn Conant Van Blarcom, R.N., with an Introduction by J. Clifton Edgar, M.D., Consulting Obstetrician to Bellevue Hospital, and Frederick W. Rice, M.D., Associate Professor of Obstetrics, New York University and Bellevue Hospital. Cloth. Price, $1.50. Pp. 237, with 70 illustrations. New York: The MacMillan Company, 1922.

This is, on the whole, an exceptionally practical book. It covers completely the question of prenatal care and the care of the infant during the first few weeks. The book is fully illustrated, but it is open to the objection that some of the illustrations are technical, and will merely disturb the expectant mother without giving her any practical information. This refers particularly to the diagrams showing the position of the child in utero. Such diagrams have no real utility for the layman; neither have the microscopic and gross sections showing tissues involved in generation.

"SUGGESTION" AND COMMON SENSE. By Allan Bennett, M.D., M.R.C.P., Torbay Hospital, Torquay. Cloth. Price, $2.25, net. Pp. 105. New York: William Wood & Co., 1922.

Beginning with ridicule of modern psychotherapeutic doctrines as efforts to treat "a fragile and elusive figment (the unconscious) with a gross and mystifying materialism," the author endeavors to substitute for such magistral dogmatisms a concept of an "intellect" inherent in all living cells, even those of the segmenting mammalian ovum. What is gained by this method of description, and in what way it is less an "elusive figment," is not clear. Dr. Bennett then emphasizes the primeval antiquity of suggestion in medical practice (of all kinds and cults) and seems to regard practically all therapeutic effects as the outcome of this influence. He takes great credit to himself because, unlike some others, he is "convinced that my patient had only herself to thank for the cure." Dr. Bennett is evidently an enthusiast and probably gets results, but one may wonder whether environmental influences are not of equal importance, as factors in human reactions, with the beliefs and faiths he somehow acquires. This little book is interesting but, if followed, is liable to lead to medical nihilism.

Medicolegal

Hospital a Lawful Business but May Become a Nuisance

(Emrich v. Marcucilli (Ky.), 244 S. W. R. 865)

The Court of Appeals of Kentucky says that, strictly speaking, no lawful business or enterprise is ever a nuisance per se, or to be classed as in and of itself a nuisance, the true definition of a "nuisance per se" being one wholly forbidden by the law. But, that a hospital, which is a lawful business, may, on account of extraneous facts, become a nuisance to one within sufficient proximity thereto is everywhere recognized. Many authorities establish the fixed doctrine, without dissent from any court, that no business, however lawful, may be operated so near to the property of another as materially to interfere with the latter's enjoyment of his own; but the interference must be a substantial, as distinguished from a merely fanciful one. In this case, the defendant acquired an old residence and converted it into what he operated as a general and lying-in hospital. Plaintiff Marcucilli's residence at its nearest point was about 10 feet from the north side of the hospital, and at other places as far as 23 feet from the hospital. There were windows on the south side of his house and on the north side of the hospital. The plaintiff sought to have the operation of the hospital enjoined as a nuisance, and the defendant was perpetually enjoined from operating in his building a lying-in hospital, and enjoined from or suffering offensive odors to invade the plaintiff's dwelling from his hospital operated as a general one. In affirming that judgment, the court of appeals is of the opinion that, leaving out of the question the effect of such a business on the financial value of the plaintiff's property, the proof was sufficient to show there was such an unlawful interference by noises and odors with the plaintiff's comfortable enjoyment of his residence as to justify him in maintaining this proceeding, and the court did not err in restraining the defendant from operating a lying-in hospital in his building. There was no evidence that any objectionable noises or odors of the disturbing kind referred to were produced through the operation in the defendant's building of a general hospital, and because its consequential effects might be to reduce the value of the plaintiff's property was not sufficient in itself to create an abatable nuisance. Besides, the only evidence introduced on the reduced value of the plaintiff's premises was based on the operation of the defendant's property as a lying-in hospital, although it is possible that the mere operation of any character of hospital in proximity to the plaintiff's premises would have some depressing effect on value. The business, as has been seen, is a lawful one, and becomes a nuisance only when the manner of its operation is such as to produce the discomforts of which the law will take cognizance. If the operation of the defendant's hospital should at any time be conducted in such a manner as to produce them, or if he should convert it into a contagious hospital or treat therein patients with contagious diseases, and thereby render the habitation of the plaintiff's premises dangerous to the health of the occupants, it would then become such a nuisance as would entitle the plaintiff to a new application for relief.

Insufficient Evidence of Damages from Amputation

(Bush v. Chilcott (Mont.), 210 Pac. R. 907)

The Supreme Court of Montana, in reversing a judgment for $3,500 damages rendered against the defendant for alleged malpractice, does so on the ground that, viewing the evidence in the most favorable light possible for the plaintiff, the evidence was not sufficient to support a verdict for damages. The court says that the plaintiff was thrown from a cart, one wheel of which passed over his left leg, breaking both bones of the leg about 3 inches above the ankle. His team ran away, and he walked and crawled 7 miles to the nearest ranch. From there he was taken in an automobile to the defendant physician, arriving there eight or nine hours after the accident. Two weeks after the accident, he was taken to a hospital, where his leg was amputated about midway between the knee and the hip. It was alleged that

the part of the plaintiff's leg below the point at which the break occurred became infected with gangrene; that the defendant knew of that fact, but did nothing to prevent the spread of the infection and did not amputate the leg promptly so as to prevent the spread of the infection, and that because of such negligence the infection spread, and the plaintiff lost the additional portion of the leg, and was damaged thereby. The damage claimed was that which it was alleged resulted from the loss of the additional portion of the leg. The loss of the foot, together with a portion of the leg between the break and the knee was attributable to and a direct result of the injury resulting from the accident. No attempt was made in the complaint to hold the defendant liable for this loss. Assuming that the defendant was negligent in the manner charged, and that such negligence was the proximate cause of the loss of the additional portion of the limb, then, on proof thereof, the plaintiff was entitled to recover such damages as would compensate him for all the detriment proximately caused thereby. But all the evidence in the record which related to the damage alleged to have been suffered, except the fact of the amputation, was contained in the plaintiff's testimony to the effect that he had not been able to make a success of trapping, as he had before; he was slower in setting and tending his traps; he had to use an inferior trap because he could not use his foot to step on the springs, and he had to use a very gentle horse because he could not mount as he previously could; nor was he able to make himself useful in caring for sheep, as formerly. He testified further that it would take one fourth or more from what he used to make; that if he had lost only his foot, so that he would still have a knee-joint, he could earn more money than without the knee-joint. The evidence was not sufficient to support the verdict for damages, and for that reason the judgment recovered by the plaintiff is reversed, and a new trial granted to the defendant. While it is true that, in cases of this character, damages cannot be ascertained with mathematical certainty, yet a jury must have some competent evidence before it from which to arrive at its conclusions, and must not base its verdict on mere conjecture and speculation; and this rule is not altered by the fact that the ascertainment of the proper amount of damages is a matter of practical difficulty. In the testimony mentioned, the plaintiff compared his ability after the amputation, in the several respects stated, with his efficiency in like respects before the accident occurred, while a part of this difference was caused by the loss of the foot and part of the leg below the knee, which, admittedly, was the result of the unfortunate accident, and not in anywise occasioned by the alleged negligence of the defendant.

Competence of Insane Persons to Be Witnesses

(Lanier v. Bryan (N. C.), 114 S. E. R. 6)

The Supreme Court of North Carolina says that the tests that have usually been applied to determine the competence of a person offered as a witness are those of age, mental power, religious belief, and capacity to understand the nature and obligation of an oath. Particularly with reference to the first three of them the decisions have not been uniform. With respect to age it is now generally held that no precise minimum limit can be fixed, and that as to mentality the controlling factor is the strength of the witness' understanding, or the degree of his intelligence. In a number of American cases decided in the first half of the nineteenth century, it was held that idiots and insane persons were not competent to be witnesses; but subsequently the courts, "keeping pace with the progress of science" and the demands of a more enlightened period, relaxed the rigor of these decisions and modified the former strictness of the rule. Now the principle is generally recognized that a lunatic or a person affected with insanity is competent to be a witness if he has sufficient mind to understand the nature and obligation of an oath and correctly to receive and impart his impressions of the matters which he has seen or heard.

In this case, in which the plaintiff recovered a judgment for damages for seduction, the trial judge, after hearing the testimony of a physician who was an expert in mental diseases and who had treated the plaintiff in a training school, found therefrom that she was over 21 years old and had been adjudged to be of unsound mind; that she was an imbecile and had a mentality not in excess of that of a normal child of from 3 to 6 years; and that she was incapable of any sense of moral obligation or of understanding the nature of an oath. But immediately thereafter the plaintiff was examined as a witness, and after hearing her testimony and considering it in connection with other evidence, the judge entered of record a general order adjudging the plaintiff competent to testify, and thus practically reversed and nullified portions of his previous findings and brought the case within the general rule, freed from the exceptions. The supreme court finds no error entitling the defendant to a new trial.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, San Francisco, June 25-29. Dr. Olin West, 535 N. Dearborn St., Chicago, Secretary.

American Association for Thoracic Surgery, Chicago, May 29-30. Dr. Charles Gordon Heyd, 46 W. 52d Street, New York City, Secretary.
American Association of Anesthetists, San Francisco, June 25-27. Dr. F. H. McMechan, Avon Lake, Ohio, Secretary.
American Bronchoscopic Society, Atlantic City, May 9. Dr. William B. Chamberlin, Osborn Building, Cleveland, Secretary.
American Climatological and Clinical Association, Niagara Falls, Ont., May 23-25. Dr. Arthur K. Stone, Framingham Center, Mass., Sec'y.
American Gynecological Society, Hot Springs, Va., May 21-23. Dr. A. H. Curtis, 104 South Michigan Avenue, Chicago, Secretary.
American Laryngological Association, Atlantic City, May 16-18. Dr. George M. Coates, 1811 Spruce Street, Philadelphia, Secretary.
American Laryngological, Rhinological and Otological Society, Atlantic City, May 10-12. Dr. W. H. Haskin, 40 E. 41st St., New York, Sec'y.
American Ophthalmological Society, Colorado Springs, June 19121. Dr. T. B. Holloway, 1819 Chestnut Street, Philadelphia, Secretary.
American Orthopedic Association, Rochester, N. Y., June 7-9. Dr. DeForrest P. Willard, 1630 Spruce Street, Philadelphia, Secretary.
American Pediatric Society, French Lick, Ind., May 31-June 2. Dr. H. C. Carpenter, 1805 Spruce Street, Philadelphia, Secretary.
American Proctologic Society, Los Angeles, June 22-23. Dr. Ralph W. Jackson, 245 Cherry Street, Fall River, Mass., Secretary.
American Radium Society, San Francisco, June 25-26. Dr. Edwin C. Ernst, Humboldt Bldg., St. Louis, Secretary.
American Society of Clinical Pathologists, San Francisco, June 25-26. Dr. Ward Burdick, 652 Metropolitan Bldg., Denver, Secretary.
American Therapeutic Society, San Francisco, June 22-23. Dr. Lewis H. Taylor, The Cecil, Washington, D. C., Secretary.
American Urological Association, Rochester, Minn., May 21-23. Dr. H. G. Hamer, 723 Hume-Mansur Bldg., Indianapolis, Ind., Secretary.
Arizona Medical Association, Grand Canyon, June 21-22. Dr. D. F. Harbridge, Goodrich Bldg., Phoenix, Secretary.
Association for the Study of Internal Secretions, San Francisco, June 25. Dr. F. M. Pottenger, Title Insurance Bldg., Los Angeles, Secretary.
California, Medical Society of the State of, San Francisco, June 21-23. Dr. W. E. Musgrave, Balboa Bldg., San Francisco, Secretary.
Connecticut State Medical Society, New Haven, May 23-24. Dr. C. W. Comfort, Jr., 27 Elm Street, New Haven, Secretary.
Illinois State Medical Society, Decatur, May 15-17. Dr. W. D. Chapman, Silvis, Secretary.
Iowa State Medical Society, Ottumwa, May 9-11. Dr. T. B. Throckmorton, Bankers Trust Building, Des Moines, Secretary.
Maine Medical Association, Houlton, June 5-7. Dr. B. L. Bryant, 265 Hammond Street, Bangor, Secretary.
Massachusetts Medical Society, Pittsfield, June 12-13. Dr. W. L. Burrage, 182 Walnut Street, Brookline 46, Boston, Secretary.
Medical Women's National Association, San Francisco, June 25-26. Dr. M. A. Potter, First National Bank Bldg., San Diego, Calif., Secretary.
Mississippi State Medical Association, Vicksburg, May 8-9. Dr. T. M. Dye, Clarksdale, Secretary.
Missouri State Medical Association, Joplin, May 8-10. Dr. E. J. Goodwin, 3526 Pine Street, St. Louis, Secretary.
National Tuberculosis Association, Santa Barbara, Calif., June 20-23. Dr. George M. Kober, 370 Seventh Avenue, New York, Secretary.
Nebraska State Medical Association, Lincoln, May 14-17. Dr. R. B. Adams, 1013 Terminal Building, Lincoln, Secretary.
New Hampshire Medical Society, Concord, May 22-23. Dr. D. E. Sullivan, 7 North State Street, Concord, Secretary.
New Jersey, Medical Society of, Atlantic City, June 21-23. Dr. William J. Chandler, South Orange, Secretary.
New Mexico Medical Society, Albuquerque, June 19-21. Dr. J. W. Elder, Santa Fe Hospital, Albuquerque, Secretary.
North Dakota State Medical Association, Grand Forks, May 31-June 1. Dr. H. J. Rowe, Lisbon, Secretary.
Pacific Northwest Medical Association, Seattle, June 19-21. Dr. F. Eppilen, 422 Paulsen Building, Spokane, Secretary.
Radiological Society of North America, San Francisco, June 21-22. Dr. M. J. Sandborn, Appleton, Wis., Secretary.
Rhode Island Medical Society, Providence, June 7. Dr. I. W. Leech, 369 Broad Street, Providence, Secretary.
Texas, State Medical Association of, Fort Worth, May 8-10. Dr. Holman Taylor, 207½ W. 11th Street, Fort Worth, Secretary.
Utah State Medical Association, Salt Lake City, June 20-22. Dr. W. L. Rich, Boston Building, Salt Lake City, Secretary.
West Virginia State Medical Association, Beckley, June 12-14. Dr. Robert A. Ashworth, Moundsville, Secretary.
Western Society for the Study of Hay Fever, Asthma and Allergic Diseases, San Francisco, June 25. Dr. A. H. Rowe, Hutchinson Bldg., Oakland, Calif., Secretary.
Wyoming State Medical Society, Laramie, June 20-21. Dr. Earl Whedon, Sheridan, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Arkansas Medical Society Journal, Little Rock

March, 1923, **19**, No. 10

Fractional Gastric Analysis. W. D. Rose, Little Rock.—p. 187.
Treatment of Psoriasis. E. A. Purdum, Hot Springs.—p. 192.
Ectopic Pregnancy. C. V. Scott, Little Rock.—p. 194.

American Journal of Medical Sciences, Philadelphia

165: 313-434 (March) 1923

Mechanism of Physical Signs, with Special Reference to Foreign Bodies in Bronchi. C. Jackson, Philadelphia.—p. 313.
*Nature of Complement Fixation Reaction in Syphilis in Relation to Standardization of Technic. J. A. Kolmer, Philadelphia.—p. 320.
*Production of Heart Murmurs. W. D. Reid, Boston.—p. 328.
*Value of Roentgen Ray in Cardiac Diagnosis. F. N. Wilson and E. F. Merrill, Ann Arbor, Mich.—p. 340.
*Sudden Death Following Thoracentesis. E. S. Du Bray, San Francisco. —p. 357.
*Diffuse Glomerulonephritis. H. Elwyn, New York.—p. 366.
*Graves' Syndrome and Involuntary Nervous System. L. Kessel, C. C. Lieb and H. T. Hyman, New York.—p. 384.
I. Thyroid Enlargement in Persons without Sympathomimetic Manifestations. L. Kessel and H. T. Hyman, New York.—p. 387.
*Significance of Sequence and Mode of Development of Symptoms as Aid to Diagnosis of Multiple Sclerosis in Early Stages. W. B. Cadwalader and J. W. McConnell, Philadelphia.—p. 398.
Traumatic Cerebral Edema. W. Sharpe, New York.—p. 405.
Prognosis in Cancer of Breast. H. C. Saltzstein, Detroit.—p. 424.
*Magnesium Sulphate as Sedative. P. G. Weston and M. Q. Howard, Warren, Pa.—p. 431.
Nephritis: Necropsy Reports and Recent Views. R. Floyd, New York. —p. 434.

Complement Fixation Reaction in Syphilis.—Kolmer favors standardization of the Wassermann test. He feels that his test meets all requirements. The first purpose should be to secure as good a technic as possible in the light of present knowledge. More unification of results in Wassermann tests in different laboratories means little or nothing unless the test is technically correct and as sensitive as is possible with practical specificity. Even under these conditions individual variation in the scientific attainments and accuracy of different serologists will ever be modifying factors, if the test aims to be a sensitive one; but Kolmer believes standardization is possible under these conditions.

Nature of Heart Murmurs.—In the hope of obtaining a better understanding of the nature of murmurs detected in the physical examination of the patient, Reid has studied the murmurs which may be produced in rubber tubes through which a stream of water is passing. He has also analyzed clinical records and necropsy reports. A murmur is most readily produced when conditions exist for the formation of a "veine fluide" or jet. Such conditions are: (*a*) stenosis or narrowing of the vessel; (*b*) sudden increase in the caliber of the tube. A certain velocity of the stream is necessary. Within certain limits the loudness or intensity of the murmur is proportional to the velocity of the stream. The murmur is propagated both up stream and down, but better in the latter direction. A second condition, easily giving rise to a murmur, is the culdesac against the current. A mere sharp edge or lip is sufficient to cause a murmur. The murmur produced by the culdesac against the current is less intense than that associated with the veine fluide, and it is better transmitted up stream than down stream. Roughness of the inner surface of a vessel appears not to cause a murmur, or if this be not literally true, then a murmur due to roughness of the vessel wall is very slight and in no sense comparable to the murmurs produced when a veine fluide or a culdesac against the stream are present. The conditions suitable for the formation of a veine fluide, a culdesac against the stream and roughness of the vessel wall may be and often are present together in the human heart. The quality of the murmur is influenced by the character of the vessel wall at the point of production. In their transmission, murmurs may be altered by the effect of resonance and of the reflection and refraction of sounds.

Value of Roentgen Ray in Cardiac Diagnosis.—While recognizing the usefulness of the roentgen ray in the diagnosis of cardiac disease, Wilson and Merrill warn against basing a diagnosis of cardiac enlargement on the roentgen-ray findings alone, particularly in cases in which no cause for such enlargement can be found. The exaggeration of the importance of the roentgen-ray examination of the heart, at the expense of other methods, is deplored.

Sudden Death Following Thoracocentesis.—Du Bray concludes that in his case the accident was caused by a combined physiologic-pathologic mechanism, namely, injury and congestion of the lung parenchyma plus acute pulmonary edema with secondary circulatory reflexes. Nothing was observed either in the clinical picture or in the necropsy findings to suggest that air embolism was a factor.

Diffuse Glomerulonephritis.—Volhard's theory of acute angiospastic renal ischemia as the starting point of diffuse glomerulonephritis, Elwyn thinks is the best explanation so far offered for the pathogenesis of this disease. The theory is also of value in treatment. At all times, when the functional reserve of the kidney is lessened or has entirely disappeared, either by acute ischemic or by chronic changes, treatment should be directed toward limiting the intake of those substances that in their normal quantities cannot be eliminated by the kidney which has become limited in its function. These substances are protein, food and water, and their reduction is always indicated when the blood shows an increase in the nitrogenous waste substances.

Hyperthyroidism and Nervous System.—The results of a study of fifty-five persons with thyroid enlargement are presented by Kessel and Hyman. None of the patients presented sympathomimetic manifestations or alterations in basal metabolism. The efficacy of iodids in reducing neck circumference is again demonstrated. The mechanism of the production of hyperplasia is through diminution in the iodin store. That hyperplasia of the thyroid gland indicated hypersecretion, the authors assert, is based on inferences which are not compatible with the available data. There was no evidence to support the theory of the toxicity of adenoma. The influence of nervous impulses on the secretion of the thyroid gland has not been demonstrated. The rôle of the thyroid in the production of clinical symptoms is held to be greatly overemphasized.

Diagnosis of Multiple Sclerosis.—Cadwalader and McConnell state that the sequence, mode of development, and the combination of signs are more important than the individual symptoms themselves. In addition, the occurrence of cerebral symptoms, most particularly scanning speech and nystagmus, either alone or after spinal symptoms have developed, or the reverse—spinal symptoms following the cerebral manifestations—is strongly indicative of the dissemination of the pathologic process. If there is a history of earlier remissions, or of a discontinuance of the process in the early stages, followed by a progressive course, the nature of the disease can be determined with considerable accuracy. With the exception of syphilis, no subacute or chronic disease other than multiple sclerosis presents this remittent picture so constantly.

Magnesium Sulphate as Sedative.—Weston and Howard record their experience with magnesium sulphate as a sedative. Pure, recrystallized magnesium sulphate, with its water of crystallization was made into a 50 per cent. solution with distilled water and sterilized. The solution (2 c.c.) was injected subcutaneously and intramuscularly more than a thousand times. No local pain or sloughing occurred when proper aseptic technic was used. In 82.7 per cent. of the cases the sedative action was prompt, the patient becoming quiet after fifteen or thirty minutes and sleeping from five to seven hours. In a few instances the patient became quiet but did not sleep. The effect persisted for from five to ten hours. The salt was found to be a very excellent substitute for morphin and hyoscin in many cases. It was found necessary to repeat the dose of 2 c.c. in 6 per cent. of the cases before sedation was obtained. In 11 per cent. of the cases no effect at all was noticed after the injection of three or more doses. The salt is quite harmless in the dose necessary to produce

sedative effect and can be given liberally when necessary. No opportunity has occurred for using the salt in preoperative or postoperative cases or in acute thyrotoxicosis.

American Journal of Ophthalmology, Chicago

6: 161-223 (March) 1923

Significance of Tuberculin Reaction and Other Problems in Ocular Tuberculosis. W. H. Luedde, St. Louis.—p. 161.
Corneal Deposits of Cholesterin and Lime Salts Dissolved by Alcohol. L. F. Love, Philadelphia.—p. 174.
Neurofibroma of Orbit. E. Stieren, Pittsburgh.—p. 176.
Malignant Lymphoma of Lacrimal Gland. L. M. Francis, Buffalo.—p. 182.
Tumors and Cysts Arising Near Apex of Orbit. W. L. Benedict, Rochester, Minn.—p. 183.
Intracapsular Cataract Extraction with Erisiphake. W. Zentmayer, Philadelphia.—p. 202.
Practical Points in Refraction. C. D. Westcott, Chicago.—p. 204.
Plea for More General Use of Cross Cylinder. W. H. Crisp, Denver.—p. 209.
Practical Side of Ophthalmometer. O. Orendorf, Canon City, Colo.—p. 215.
Three Cases of Asthenopia Treated by Psychotherapy. W. B. Lancaster, Boston.—p. 216.
Incubation Period of Trachoma. Contagiousness in Atrophic Stage. H. Gifford, Omaha.—p. 221.
Glioma Involving Orbit. C. J. Adams, Kokomo, Ind.—p. 222.
Forceps for Trial Cylinders without Handles. S. L. Olsho, Philadelphia.—p. 223.
Cataract Extraction in Man Suffering from Pernicious Anemia. J. B. Stanford, Memphis, Tenn.—p. 223.

American Journal of Public Health, Detroit

13: 163-210 (March) 1923

The Administration of Health Departments. A. W. Freeman, Baltimore.—p. 163.
Prevention of Pneumonia by Pneumococcus Vaccine. R. L. Cecil, New York.—p. 182.
Preventive Infant Feeding—Its Simplification. H. J. Gerstenberger, Cleveland.—p. 185.
Medical Examination of Food Handlers. C. V. Craster, Newark, N. J.—p. 196.
Attempt to Isolate Bacillus Typhosus or Bacillus Paratyphosus from Clotted Blood. R. Gilbert, Albany, N. Y.—p. 201.
Local Quarantine and Inoculation for Smallpox in American Colonies (1620-1775). E. C. Tandy, New York.—p. 203.
Lead in Drinking Water. C. D. Howard.—p. 207.
Typhoid Fever Epidemic Traced to Cheese. E. D. Rich.—p. 210.

Archives of Neurology and Psychiatry, Chicago

9: 283-358 (March) 1923

*Deep Sensibility of Face. L. E. Davis, Chicago.—p. 283.
*Afferent Impulses of Trigeminal Nerve. M. W. Gerard, Chicago.—p. 306.
*Hereditary and Nonhereditary Mental Defect. H. W. Potter and R. S. Viers, Thiells, N. Y.—p. 339.
*Case of Ambulatory Automatism. H. D. Singer, Chicago.—p. 347.
*Basal Metabolism in Mental Disease. K. M. Bowman and G. P. Grabfield, Boston.—p. 358.

Deep Sensibility of Face.—In studying the deep sensibility of the face, Davis attempted to establish two points: (1) Is pressure pain sensibility lost after division of the sensory root of the trigeminal nerve? (2) If this type of sensation is not lost, do the fibers which transmit pressure pain travel cephalad in the facial nerve? His conclusions are as follows: Pressure pain sensibility in the face is retained following trigeminal neurectomy or ganglionectomy, although all superficial cutaneous sensibility is lost. Afferent fibers which transmit pressure pain sensation from the face exist within the facial nerve trunk. The cells of origin of these afferent fibers exist within the geniculate ganglion, and their internal prolongations pass cephalad within the nervus intermedius. The facial nerve is, therefore, a mixed nerve in man, and contains a general visceral sensory component.

Afferent Impulses of Trigeminal Nerve.—Besides offering data on the anatomy of the central trigeminal structures in cat and man, the following physiologic observations are discussed by Gerard. Painful, and possibly thermal, stimuli in the trigeminal area produce conscious and reflex effects via the spinal fifth tract and nucleus only, while tactile stimuli produce effects via the main sensory fifth nucleus only (thirty-nine cases of occlusion of the posterior inferior cerebellar artery, eight other human cases, and twenty-one cats with experimental lesions). Pain fibers from the cornea terminate just below the upper 7 millimeters of the spinal tract (cat). Pain fibers from adjacent regions descend further (human). The fields of tactile sensibility of the two trigeminal nerves supplying the nose do not overlap (cat). The adequate stimulus for the oculocardiac reflex is pain rather than pressure, and the reflex path includes the spinal fifth tract. The spinal fifth tract and nucleus are functionally related to the tract of Lissauer and the substantia gelatinosa, respectively. Deep pain sensation from the facial muscles is probably carried by the facial nerve. These results favor the view that impulses from more than one type of sensory stimulus may be transmitted by the same nerve fiber.

Hereditary and Nonhereditary Mental Defect.—Two groups, one comprising fifty patients with a history of feebleminded ancestors and the other composed of a like number of patients having an unimpaired heredity, were studied comparatively by Potter and Viers, with respect to etiology, intelligence, physical growth and physical defects and diseases. A history of possible etiologic significance other than heredity was found in eight patients belonging to the hereditary group and in thirty-one belonging to the nonhereditary group. The average intelligence quotient of the hereditary group, fifty-six, was fifteen points higher than that of the nonhereditary group, which was forty-one. In the former group there were no idiots; five were imbeciles, thirty-five were morons and ten were borderline types. In the latter group there were twelve idiots, twelve imbeciles, twenty-four morons and only two belonging to the borderline types. The whole number of the two respective groups showing physical defects and diseases did not differ materially, there being twenty-six cases among the hereditary group, and thirty among the nonhereditary group. One further salient feature is the fact that among 100 cases, in more than one half some physical disease or defect was present. Among this number were not included patients with minor defects of the eyes, ears, nose or throat. This study would tend to indicate that there are decided differences between hereditary types of mental deficiency and those cases which for want of a better term might be called sporadic.

Ambulatory Automatism.—The outstanding features of the personality of the patient whose case is cited by Singer were restless energy combined with a sensitive, timorous conventionality. Coupled with the associations of childhood, the former led to a craving for change and adventure which was held in check by the latter. The man joined the navy, developed tuberculosis and was discharged. Alcohol given in treatment was adopted as a substitute for his hopes and served for a time to allay the disappointment. With returning health this was discontinued, but a recurrence of the illness and its accompanying fears, a serious psychic shock, exhaustion and an accidental dose of whisky led to an effort to escape by a fugue with a blind return to excessive drinking. Following this first fugue that lasted a few days, subsequent difficulties were reacted to in the same manner. Numerous fugues occurred, one lasting two and one-half years. In these fugues he supported himself, drank heavily and twice married.

Basal Metabolism in Mental Disease.—In a series of fifty cases of mental disease only four showed increased basal metabolism. Three of these cases belonged to the manic-depressive group. The fourth case with a high reading was one of psychopathic personality without psychosis. The authors feel that this tendency toward a low basal metabolism in cases of mental disease is of importance and merits consideration in formulating theories as to etiology and treatment.

Florida Medical Association Journal, St. Augustine and Jacksonville

9: 129-135 (Feb.) 1923

Suppurative Arthritis Following Focal Infection. E. J. Melville, St. Petersburg.—p. 129.
Invisible Ingredient in Medicine and Surgery. R. R. Kime, Orlando.—p. 131.
Lipoids. H. Iscovesco, Paris, France.—p. 135.

Journal of Bacteriology, Baltimore

8: 103-173 (March) 1923

Influence of H Ion Concentration on Structure. I. B. Influenzæ. G. Reed and J. H. Orr, Kingston, Canada.—p. 103.
Variations in Hydrogen Sulphid Production by Bacteria. F. W. Tilley, Washington, D. C.—p. 115.

*Comparison of Ziehl-Neelsen and Schulte-Tigges Methods of Staining Tubercle Bacilli. H. L. Shoub, New York.—p. 121.
Physiologic Youth in Bacteria. J. M. Sherman and W. R. Albus, Washington, D. C.—p. 127.
Salt Action. VI. Stimulating and Inhibitive Effect of Certain Cations on Bacterial Growth. M. Hotchkiss, New Haven, Conn.—p. 141.
Bacteriophage of D'Herelle: Its Therapeutic Applications. A. Beckerich and P. Hauduroy, Strasbourg, France.—p. 163.
Variation of Bacterium Coli. H. Bergstrand, Stockholm, Sweden.—p. 173.

Methods of Staining Tubercle Bacilli.—Shoub thinks that the Schulte-Tigges method of staining tubercle bacilli is not more difficult than the Ziehl-Neelsen method; it gives about 33 per cent. more positives; it exposes more than five times as many organisms; it does away with the use of alcohol.

Journal of Industrial Hygiene, Boston

4: 163-491 (March) 1923

Carbon Monoxid Asphyxia: Problem of Resuscitation. C. K. Drinker and W. B. Cannon, Boston.—p. 163.
Industrial Medicine in 1922. W. I. Clark, Jr., Worcester, Mass.—p. 474.
Ventilation of English Factories and Workshops in Hot Weather. T. C. Angus.—p. 479.
Influence of Benzol on Certain Aspects of Metabolism. F. P. Underhill and B. R. Harris, New Haven, Conn.—p. 491.

Journal of Laboratory and Clinical Medicine, St. Louis

8: 357-411 (March) 1923

Clinical and Laboratory Procedures in Pediatrics. A. Levinson, Chicago.—p. 357.
Mixed Tumors of Uterus. A. J. Petersen, Chicago.—p. 369.
Pseudospirochetes Derived from Red Blood Cells. E. W. Schultz, San Francisco.—p. 375.
*Pharmacology of Isopropyl Alcohol. Synopsis of Available Data. D. H. Grant, Elizabeth, N. J.—p. 382.
Pathogenicity of Streptococci from Diphtheria Throats for Mice. L. Brody and L. Arnold, Chicago.—p. 387.
Changes in Streptococci Flora of Throat During Diphtheria. L. Arnold, Chicago.—p. 389.
Deterioration of Procain Solutions. M. L. Bonar, Morgantown, W. Va.—p. 391.
Simplified Technic for Clinical Blood Chemistry. A. Mirkin and S. J. Druskin, New York.—p. 395.
Successful Method for Isolation of Diphtheria Bacilli from Mixed Cultures. A. I. van Saun and I. A. Graves, New Haven, Conn.—p. 406.
Note on Comments of Reznikoff on Use of Sodium Sulphate as Precipitant of "Pseudoglobulin." P. E. Howe, Princeton, N. J.—p. 408.
*Method for Determination of Hemoglobin. R. L. Haden, Kansas City, Mo.—p. 411.

Pharmacology of Isopropyl Alcohol.—Grant fails to see how any reasonable objection can be made to the use of isopropyl alcohol as a lotion or vehicle for external medication, nor as a constituent of compounds for oral and nasal medication, such as practically all mouth washes, gargles, dentifrices, etc., which do not involve the probability of swallowing more than a few cubic centimeters, at most, of the alcohol. The toxicity of isopropyl alcohol probably lies between one and two times that of ethyl alcohol. Isopropyl alcohol is not potable.

Determination of Hemoglobin.—The method described by Haden is an adaptation of the acid hematin method of Sahli to the Hellige colorimeter.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

21: 77-151 (March) 1923

Action of Certain Depressant Drugs on Sensory Threshold for Faradic Stimulation in Human Subjects and the Effect of Tobacco Smoking on This Action. W. Hale and G. P. Grabfield, Boston.—p. 77.
Biologic Significance of Lipoids. Action of Kephalin and Lecithin. W. S. Van Leeuwen and A. V. S. Györgyi.—p. 85.
Sensitivity of Different Nerve Endings to Atropin. V. E. Henderson, Toronto.—p. 99.
*Active Principles of Pituitary Gland. H. W. Dudley, London.—p. 103.
*Comparative Toxicity of Inorganic Lead Compounds and Metallic Lead for Pigeons. P. J. Hanzlik and E. Presho, San Francisco.—p. 123.
*Therapeutic Efficiency of Various Agents for Chronic Poisoning by Metallic Lead in Pigeons. P. J. Hanzlik and E. Presho, San Francisco.—p. 131.
Comparative Toxicity of Metallic Lead and Other Heavy Metals for Pigeons. P. J. Hanzlik and E. Presho, San Francisco.—p. 145.
Biologic Action of Potassium and Its Radioactivity. H. Zwaardemaker, Utrecht, Holland.—p. 151.

Active Principles of Pituitary Gland.—An attempt has been made by Dudley to effect a purification of the oxytocic principle of the posterior lobe of the pituitary gland. A crystalline picrate was obtained which had the characteristic actions of pituitary extracts on plain muscle and blood pressure. It had an activity of the same order as that of histamin. It was found to be the picrate of an inert substance merely contaminated with small amounts of the pituitary principles and was eventually identified as potassium creatinin picrate. Out of the mother liquor from the recrystallization of this potassium creatinin picrate a small alcohol soluble residue was obtained. This yielded an acetone insoluble *A* and an acetone soluble *R* fraction. *A* had an oxytocic activity equal to about twelve times that of histamin (reckoned as base), producing a definite contraction of the uterus in a dilution of 1:1,250,000,000. *A* also contained a pressor principle, displaying no preliminary depressor activity. It produced a strong rise of blood pressure in a dose of 0.01 mg. *R* had one-twentieth the oxytocic activity of *A*, and in doses of 0.5 mg., produced a strong depressor action followed by a moderate pressor action on the blood pressure. Evidence is put forward to show that the oxytocic and pressor principles of *A* are two separate chemical substances, and that the pressor principles of *A* and *R* are most probably also two distinct chemical entities. It is considered, therefore, that there is valid evidence for the presence of at least three different physiologically active principles in pituitary extracts. This view is in direct conflict wth that of Abel and Rouiller.

Toxicity of Inorganic Lead Compounds and Metallic Lead.—The following lead compounds: chiorid, iodid, sulphid, carbonate and acetate, administered in single, and continuous or daily doses, whose lead content was equivalent to and greater than the fatal dosage of metallic lead, Hanzlik and Presho found were less toxic than metallic lead for pigeons under similar conditions of experimentation.

Therapeutic Efficiency of Various Agents in Lead Poisoning.—The therapeutic efficiency of some agents in current use for the treatment of chronic lead poisoning was tested by Hanzlik and Presho in pigeons. Using sodium chlorid as control, the daily administration of sodium iodid in food and drinking water, and of magnesium sulphate and calcium sulphid in food, in doses corresponding to medium and large therapeutic doses, were found to be beneficial. This agrees generally with the clinical results obtained with these agents in the treatment of chronic lead poisoning in man. The beneficial effects of magnesium sulphate are due in part, at least, to its cathartic action. The beneficial therapeutic effects of all agents tested are attributed partly to the diminished solubility of the lead and, therefore, diminished absorption.

Michigan State Medical Society Journal, Grand Rapids

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Insulin. F. J. Banting, Toronto, Canada.—p. 113.
Advances in Radiation Therapy of Deep-Seated Tumors. R. H. Stevens, Detroit.—p. 124.
Case of Malignant Tricuspid Endocarditis. W. S. Reveno, Detroit.—p. 130.
Case of Granuloma Rubra Nasae. W. H. Gordon, Detroit.—p. 132.
Disturbance of Sleep. C. D. Camp, Ann Arbor, Mich.—p. 133.
Some Problems of Industrial Surgery. W. L. Finton, Jackson, Mich.—p. 138.
Indications for Cesarean Section; Study of 100 Cases. M. Burnell, Flint, Mich.—p. 140.
Toxemias of Pregnancy Including Pre-Eclampsia, Eclampsia and Nephritis. Indications for and Methods of Artificial Interruption of Pregnancy. R. Peterson, Ann Arbor, Mich.—p. 144.
Hyperemesis Gravidarum. J. N. Bell, Detroit.—p. 146.
Heart Disease and Pregnancy. F. N. Wilson and G. R. Herrmann, Ann Arbor, Mich.—p. 148.
Contracted Pelves and Other Serious Maternal Defects Requiring Artificial Termination of Pregnancy. H. H. Cummings, Ann Arbor, Mich.—p. 150.

Military Surgeon, Washington, D. C.

52: 233-302 (March) 1923

Shall Sex Hygiene Be Taught in the Public Schools? L. A. Stone, Chicago.—p. 233.
Progress of Medical Science During World War. W. A. N. Dorland, Chicago.—p. 244.
Diphtheria. C. Schlayer, Berlin.—p. 261.
Prussian Field Hospitals in Eighteenth Century. G. M. Blech.—p. 273.
Elementary Chemical Study of Parathyroid Glands of Cattle. A. M. Hanson, Faribault, Minn.—p. 280.
Defense of Usual Method of Calculation of Annual Death Rates. A. G. Love.—p. 285.
Sanitation on Atlantic Transports. J. D. R. Woodworth.—p. 290.

Airplane Deafness and Its Prevention. V. T. Scott.—p. 300.
Bathing and Delousing American Troops at Brest, France, Prior to Their Embarkation for United States. L. H. Dunn, Ovid, N. Y.—p. 302.

Nebraska State Medical Journal, Norfolk

8: 81-107 (March) 1923

Induction of Labor at Term. W. W. Arrasmith, Grand Island.—p. 81.
Type of Diet as an Etiologic Factor in Diabetes Mellitus. J. E. Meyer, Columbus.—p. 89.
Clinical Phases of Diabetes Mellitus. W. J. Raynor, Grand Island.—p. 93.
Peptic Ulcer. J. M. Willis, McCook.—p. 95.
Interpretation of Fevers in Children. J. V. Reilly, Grand Island.—p. 97.
Medical Practice as Business. W. R. Boyer, Pawnee City.—p. 99.
Double Uterus; Report of Case. A. L. Kee, Cambridge.—p. 101.
Acute Appendicitis Complicating Pregnancy. A. W. Anderson, West Point.—p. 102.
Ruptured Tubal Pregnancy: A Case Record. C. F. Ulrich, Valentine.—p. 105.
Nontuberculous Inflammation of Cecum. Report of Case. F. G. Kolouch, Schuyler.—p. 106.
Primary Uterine Inertia in Twin Pregnancy Following Premature Rupture of Membranes. A. Townsend, Minatare.—p. 107.

Surgery, Gynecology and Obstetrics, Chicago

36: 303-421 (March) 1923

*Surgical End-Results in General with Case of Cavernous Hemangioma of Skull in Particular. H. Cushing, Boston.—p. 303.
*Embolectomy in Treatment of Circulatory Disturbances in Extremities. E. Key, Stockholm, Sweden.—p. 309.
John B. Murphy on Surgery of Joints. R. Bastianelli, Rome, Italy.—p. 317.
*Comparative Study of Two Series of Gallbladder Lesions. J. G. Clark, Philadelphia.—p. 323.
*Bile Duct Anomaly as Factor in Pathogenesis of Cholecystitis. M. G. Seelig, St. Louis.—p. 331.
*Liver Abscess. Report of One Hundred Operations. A. I. Ludlow, Seoul, Korea.—p. 336.
Rupture of Liver. Report of Case in Which Autotransfusion was Employed. C. S. White, Washington.—p. 343.
*Functional Liver Tests. Experimental Study. V. R. Deakin and E. A. Graham, St. Louis.—p. 348.
*Hydatid Cysts of Lungs and Pleura. R. Halahan, Buenos Aires.—p. 354.
*Acute Suppurative Pleurisy. Analysis of Ninety-Four Cases. C. H. Peck and H. W. Cave, New York.—p. 357.
*Hypophysial Duct Tumor in Child of Ten. T. H. Lanman and L. W. Smith, Boston.—p. 361.
*Lymphaticostomy in Peritonitis. W. A. Costain, Toronto, Canada.—p. 365.
Obstruction at Ureterovesical Valve. T. N. Hepburn, Hartford, Conn.—p. 368.
*Effect of Radium on Rabbit Ovaries. H. A. Weiss, Davenport, Ia.—p. 373.
*Conservatism in Treatment of "Essential" Uterine Hemorrhage. S. H. Geist, New York.—p. 383.
Morphologic Histology of Adenocarcinoma of Body of Uterus in Relation to Longevity. Study of 186 Cases. A. E. Mahle, Rochester, Minn.—p. 385.
*Lingual Goiter. F. H. Lahey, Boston.—p. 395.
Primary Osteomyelitis of Patella. Report of Case and Review of Literature. V. E. Chesky, Halstead, Kan.—p. 398.
*Two Embryologically Important Specimens of Tubal Twins. L. B. Arey, Chicago.—p. 407.
*New Technic for Closure of Abdomen. R. E. Pasman, Buenos Aires.—p. 416.
Identification of Common Bile Duct in Presence of Anomalous Condition of Biliary Passages. J. Homans, Boston.—p. 417.
Overhead Elevator. P. N. Jepson, Rochester, Minn.—p. 418.
Instrument to Facilitate Threading of Surgical Needles. F. S. Richardson, Minneapolis.—p. 419.
Simplified "Towel Clip." L. M. Stearns, Kearney, Neb.—p. 420.
"Two-Forceps Maneuver" for Persistent Occipitoposterior Presentation. S. Seides, New York.—p. 421.

Surgical End-Results: Taking Stock.—The value of taking stock of surgical end-results as a means of making a better diagnosis and, therefore, prescribing better treatment is emphasized by Cushing. In his opinion, there could be no better way of gaging the working conditions in a given hospital than by the character of a report it would submit on some such question as the results, immediate and remote, of the operations for cancer of the breast, covering a given decade. Such a report would reveal at a glance not only the quality of the operative work itself, but how carefully it was safeguarded—how correct were the diagnoses leading to the operation; how thorough the pathologic studies; how dependable were the hospital case records; how conscientious the hospital in its quest for information concerning the ultimate results. He suggests that in place of the futile lists of diseases and operations which encumber the annual publications of hospitals, the hospitals be requested to include each year a concise report on some particular clinical problem. In this way ample data for almost any required statistical study could be secured, and the process would lead to a very desirable regrouping of the institutions already on the acceptable list, into those which keep sufficiently reliable and complete records of their patients and those which do not. One particular case is cited in which the original diagnosis was melanotic sarcoma of the skull, probably metastatic. The case proved, from the evidence of time as well as from the evidence of subsequent histologic studies, to be a tumor of less malignant nature than had originally been supposed—a cavernous hemangioma—and emphasizes the fact that a diagnosis of bone sarcoma in cases which have long survived operation must be received with skepticism until the original records of the case have been scrutinized anew.

Embolectomy in Circulatory Disturbances in Extremities.—Key has had occasion to remove by arteriotomy an embolus that was producing circulatory disturbance in the extremities, ten times on nine patients (one had embolus in both legs). The operation was performed from two hours to four days after the earliest symptoms. Gangrene appeared after four of the operations. In the other cases, the result was good. Of the cases in which gangrene occurred, one patient was operated on four hours after the first symptoms appeared, two after fifteen and forty-three hours, respectively, and one patient not until the fourth day.

Cholecystectomy.—The outstanding points in favor of cholecystectomy according to Clark are: the postoperative convalescence is decidedly better, the percentage of cures is larger, the mortality is less, and surgical complications are in the minority. Against these advantages may be debited as a danger the fact that should serious symptoms arise in the cholecystectomized patient which demand a subsequent operation, the opportunity for surgical alleviation is endangered through the absence of the gallbladder. Such operations are more difficult and dangerous, for anatomic orientation is greatly obscured. However, the possibility of a subsequent operation is minimized by the superior results following the removal of the gallbladder when its mucous membrane or mural integrity had been seriously impaired.

Bile Duct Anomaly.—In Seelig's case the cystic duct, emerging from the gallbladder somewhat laterally (toward the left side), and then, kinking on itself very sharply, coursed upward along the left lateral wall of the gallbladder for about one inch and a half. The duct then turned to the left to empty in the common duct. As a matter of fact, the cystic duct, as such, was not recognizable, because it was seemingly incorporated in the gallbladder wall. Furthermore the posterior wall of the gallbladder was adherent to the common duct, so that when traction was put on the gallbladder the common duct pulled up exactly as would a normal cystic duct. Division of the cystic duct at its point of entrance into the common duct and mobilization of the gallbladder brought into view the common duct coursing behind the gallbladder and emerging from below its pelvis, in the position normally occupied by the cystic duct.

Liver Abscess.—Although Korea has a temperate climate, Ludlow says that both amebic dysentery and amebic liver abscess are common among Koreans. The incidence of liver abscess in Korean women is 8 per cent.—a larger percentage than that reported in other countries. The large single abscess of the right lobe of the liver predominates.

Functional Liver Tests.—Deakin and Graham conclude from their study that phenoltetrachlorphthalein is not a satisfactory substance to use in an hepatic functional test based on the quantitative estimation of its output in the bile.

Hydatid Cysts of Lungs and Pleura.—Halahan records two cases of hydatid of the pleura and three cases of hydatid of the lung. In two of the latter cases rupture occurred into a bronchus and in one case into the pleural cavity.

Acute Suppurative Pleurisy.—The average time from the onset of the illness to the day when the diagnosis of empyema was made in the ninety-four cases analyzed by Peck and Cave was 38.2 days. Sixty-nine cases were postpneumonic, eleven were postinfluenzal; three were secondary to lung abscess. In eleven cases the preexisting cause was undeter-

mined. Rib resection was employed in seventy-nine cases. Eighteen of the ninety-four patients died, a mortality of 19.1 per cent.

Case of Hypophysial Duct Tumor.—A case of hypophysial duct tumor in a child, aged 10, showing symptoms for slightly more than one year, is presented by Lanman and Smith. The importance of the vestigial reliquiae of the embryologic hypophysial duct is emphasized.

Lymphaticostomy in Peritonitis.—Experimentation has demonstrated to Costain that there is a fatal absorption through the thoracic duct in cases of suppurative peritonitis, disproving the occurrence of a fatal absorption through the subperitoneal capillaries or through the diaphragmatic lymphatics to the anterior mediastinal lymphatics and the right lymphatic duct. It showed, moreover, what is, perhaps, the most extraordinary fact of all, that when a fatal absorption is overcome, the peritoneal cavity is capable of looking after such a formidable structure as a necrotic appendix.

Effects of Radium on Rabbit Ovaries.—The experiments reported by Weis tend to prove that 600 milligram hours of radium have no ultimate detrimental effect on rabbit ovaries. From the clinical side of these observations Weis says that when radium is given intra-uterinely for menorrhagia, for example, the resulting amenorrhea is not due to the effect of the radium on the ovarian follicles, but to the effect on the endometrium which receives a severe burn from the radium. If the burn be extensive enough a permanent amenorrhea results; and if not so severe, the amenorrhea persists only a few months.

Treatment of Essential Uterine Hemorrhage.—In four cases with profuse atypical bleeding reported by Geist, the uterus was grossly normal but both ovaries were found to be diseased. By a partial resection of as much of the diseased areas as was consistent with the maintenance of function, the symptoms were relieved and a practically normal cycle was instituted.

Lingual Goiter.—With the point of origin of the thyroid in mind, the course of its descent and the knowledge that the thyroglossal tract often persists from the foramen cecum to the isthmus of the thyroid, Lahey says the development of masses of thyroid tissue at (1) the foramen cecum—lingual goiter; (2) within the root of the tongue—intralingual goiter; (3) in front of the larynx—prelaryngeal goiter; (4) in the normal location of the thyroid, and (5) as a retrosternal accessory goiter, is readily understood.

Tubal Twins.—The two specimens described by Arey present highly significant features. The first demonstrates for the first time the actual origin of homologous human twins from the same ovum. The second specimen bespeaks its single ovum origin about as strongly, for only yolk sac and stalk are present. Hence the yolk sac appears as a vestige unessential physiologically to growth or differentiation.

New Technic for Closure of Abdomen.—Pasman places sterile gauze over the protruding omentum and intestine to protect them from contamination. Then he places three or four isolated strong catgut sutures through all the layers of the abdomen except the skin, later starting the suture of the peritoneum alone with a continuous mattress suture which is left loose. The three or four isolated stitches are tied one after the other and the protecting gauze is slowly removed. By making traction slowly and firmly at the end of the mattress suture the edges of the peritoneal layer are brought into perfect approximation. The rest of the wound, which is no longer under such tension, is closed in the same manner, the closure of the serosa being finally easily accomplished.

West Virginia Medical Journal, Huntington

17: 358-382 (March) 1923

Acute Osteomyelitis. Plea for Early Recognition and Prompt Surgical Relief. F. L. Hupp, Wheeling.—p. 358.
Treatment of Acute Brain Injuries. Indications for Operation. C. C. Coleman, Richmond.—p. 366.
Certain Essentials Necessary for Better Results in Diagnosis, Treatment and Control of Pulmonary Tuberculosis in West Virginia. E. E. Clovis and G. E. Mills, Terra Alta.—p. 374.
"Group Practice." S. Leigh, Norfolk, Va.—p. 382.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 493-542 (March 24) 1923

*Tuberculin in Diagnosis and Treatment of Tuberculosis. R. Philip.—p. 493.
Cardiac Problems in Adolescent Life. G. A. Sutherland.—p. 496.
*Man's Posture: Its Evolution and Disorders. A. Keith.—p. 499.
Nature of Arteriosclerosis. G. Evans.—p. 502.
*Treatment of Puerperal Infections. B. P. Watson.—p. 505.
*Use of Quinidin in Auricular Fibrillation. F. R. Fraser.—p. 507.

Tuberculin in Diagnosis and Treatment of Tuberculosis.—For twelve years Philip has been making extensive observations on the effects of the exhibition of tuberculin by the percutaneous as opposed to the subcutaneous method. One of the first points to emerge in the course of these studies was that when tuberculin, in varying combinations, was rubbed firmly into the skin of a tuberculous patient, it was freely absorbed. Philip's therapeutic procedure is based on these facts. Tuberculin administered percutaneously by inunction is absorbed and exerts a specific influence on tuberculous processes wherever situated, analogous to those resulting from subcutaneous injection. The curative influence becomes speedily obvious. Assuming its therapeutic value, the method has numerous advantages over other methods of exhibition. Something may be said for the absence of pain or discomfort. The procedure is not an operation in the mind of the patient. This has significance in all cases, but especially in children—the dread of the recurring puncture is excluded. The local (skin) reaction, while generally definite enough, causes little, if any, discomfort. The cutaneous response seems to afford, in some degree, a gage of the susceptibility of the patient. In this way dosage may be regulated in respect of amount and frequency. The curative influence on superficial tuberculous foci (cutaneous, glandular, etc.) is commonly apparent within a few weeks and is, as a rule, continuous. Philip strongly advises the adoption of this line of treatment on the earliest indication of chronic glandular enlargement in children. By an arrest, at that stage the graver incidents due to involvement of viscera are anticipated and prevented. The exhibition of tuberculin by inunction has the advantage that in most cases it interferes little with the life and occupation of the patient. The actual amount of tuberculin applied to the skin in a straightforward case (using, say, 25 per cent. dilution) may be estimated as approximately 0.1 c.c. The ointment containing this is rubbed (worked) into the cleansed skin over an area of 1 or 2 square inches by means of a small sterilized glass rod. The inunction may be repeated—in the absence of contraindication—once weekly.

Man's Posture: Its Evolution and Disorders.—Keith's concluding remarks, which bear on the subject of scoliosis, are: In none of the orthograde forms is such a continuous and urgent demand made on the postural spinal mechanism as in man. In man only is the whole weight of the supra-sacral part of the body supported erect on the spine over long intervals. The demand on this neuromuscular postural mechanism is even greater in the sitting than in the standing posture, particularly if a person sits leaning forward in writing and reading. Sitting bolt upright is particularly exhausting, more especially for young people in whom growth of vertebrae and of spinal muscles is proceeding apace. The muscles which act on the short levers of the spine yield first, while the muscles which act on the long costal levers can still keep on. These exhausted short spinal muscles are rested by allowing the vertebrae to rotate until the articular processes begin to lock and the transverse processes rest on the necks of the long costal levers. Herein lies the beginning of lateral curvature or scoliosis. If the habit becomes fixed, then come the deformities of chest, vertebrae, and spine with which orthopedic surgeons are only too familiar. It is not correct, however, to say that spines are not perfectly adapted to the upright posture; it would be more accurate to say that human spines were not evolved to withstand the monotonous and trying postures entailed by modern education and by many modern industries.

Treatment of Puerperal Infections.—Watson makes it a rule never to curet the uterus or carry out any intra-uterine manipulation in a case of abortion if the patient has a rise of temperature, unless there is severe hemorrhage. If the abortion is incomplete and a mass is felt projecting through and blocking the cervical canal, this may be removed very gently, but more interference than that is unwise. After the temperature has been normal for some days, if there is still evidence, by the persistence of bleeding and the patulous condition of the cervix, that the abortion is incomplete, gentle curetting may be carried out. Even after waiting this time it is almost invariably found that the patient's temperature rises after the operation, and she not infrequently has a rigor, showing almost certainly that there has been a blood invasion. Fortunately, in most cases, this is only temporary.

Quinidin Sulphate in Auricular Fibrillation.—Fraser states that quinidin treatment will result in a stable, normal rhythm if the cause of the auricular fibrillation can be treated successfully or if it has ceased to be active. In his opinion, cases in which there are extensive structural changes in the heart are not suitable for quinidin treatment, especially if the response to digitalis is not good, as dangerous symptoms may result. In some cases at least the comfort and efficiency of the patient is greater when a normal rhythm results from quinidin treatment than when digitalis treatment alone is used. In the cases in which the results are satisfactory, larger doses than 10 grains of quinidin sulphate, at intervals of six hours, were not necessary, nor smaller initial doses than 5 grains, three times a day. If necessary to maintain normal rhythm, quinidin may be continued to be administered indefinitely in doses of at least 5 grains, three times a day, and it is probably advisable in all cases to continue it for some weeks after normal rhythm has resulted, though in gradually decreasing doses.

Journal of Obstetrics and Gynæcology of the British Empire, Manchester

29: 549-644, 1922

Cranial Stress in Fetus During Labor. Effects of Excessive Stress on Intracranial Contents. E. Holland.—p. 549.
*Intracranial Trauma in the Newborn. N. B. Capon.—p. 572.
Modern Scope and Technic of Myomectomy. V. Bonney.—p. 591.
*Indications and Results of Myomectomy. A. E. Giles.—p. 608.
*Chronic Endocervicitis and Its Treatment. J. W. Burns.—p. 619.
*Three Cases of Chorea Gravidarum. E. J. Maclean.—p. 630.
Hydrometra Associated with Absence of Vagina and Genital Tuberculosis. D. Dougal.—p. 634.
Fatal Case of Postpartum Eclampsia Associated with Accidental Hemorrhage. F. Ivens.—p. 637.
Five Specimens Illustrating Necrobiotic Changes in Fibroids Associated with Pregnancy. F. Ivens.—p. 639.
Case of Unilateral Hematokolpos, Hematometra and Hematosalpinx. C. E. Purslow.—p. 643.
Placenta Praevia in Double Uterus. Cesarean Section. Recovery. W. F. Nash.—p. 644.

Intracranial Birth Trauma.—Among twenty-eight neonatal deaths reviewed by Capon, signs and symptoms of intracranial birth trauma occurred in sixteen. Intracranial hemorrhage occurred in six cases; lacerations of the dura mater in seven cases. In seven of the sixteen cases of birth trauma, intracranial congestion was the only pathologic condition found within the fetal skull. In these cases there were no visceral hemorrhages. Of sixteen infants showing signs and symptoms of birth trauma, eight were prematurely born. Among fifty-two stillbirths, signs of intracranial birth trauma occurred in forty-one cases; intracranial hemorrhage in twenty-four; lacerations of the dura mater in thirty-one cases. Of forty-one stillborn fetuses showing evidence of intracranial trauma, twelve were prematurely born. In this series of eighty neonatal deaths and stillbirths the relative frequency of the different fetal presentations in cases showing signs of birth trauma differs very little from that obtaining in the uninjured specimens. Intracranial hemorrhage occurring during labor is more frequently diffuse than localized. This fact would appear to contraindicate surgical intervention except in rare and special cases.

Myomectomy Versus Hysterectomy.—Comparing the mortality of myomectomy and hysterectomy, Giles gives these figures: hysterectomy for fibroids: 987 cases, 17 deaths, mortality 1.72 per cent.; myomectomy: 167 cases, 3 deaths, mortality 1.8 per cent. The above figures represent all cases from 1897. The present day mortality is lower, and the figures from the end of 1910 to date are as follows: hysterectomy: 684 cases, 5 deaths, mortality 0.72 per cent.; myomectomy: 107 cases, 1 death, mortality 0.93 per cent.

Chronic Endocervicitis.—Burns insists that chronic endocervicitis should be recognized as a pathologic entity distinct from endometritis. That the condition is infective is proved by the fact that a positive culture can be obtained in 92 per cent. of cases. In 50 per cent. of cases, staphylococcus, either alone or in association with some other organism, is present. Applications of various drugs, douching, tamponage, etc., give only temporary relief because the antiseptics do not reach the infecting agent in the lumen of the glands. In Burns' experience, ionization will bring about a marked improvement in those cases in which erosion is not present. For those cases associated with erosion the only method which will bring about a cure is the removal of the lower two thirds of the cervical canal, including the erosion.

Chorea Gravidarum.—The cases described by Maclean conform to the type of ordinary or Sydenham's chorea as distinguished from Huntington's chorea. The incidence of the chorea occurred in one case in the early months, and in two cases in the later months of pregnancy. All the patients gave a history of antecedent chorea or rheumatism or both. Two of the cases were of mild type, one of rather severe type. Two of the patients were primigravidae, and one had given birth to three children. None of the patients had albuminuria or other evidence of pregnancy toxemia. None showed a tendency to spontaneous abortion or premature labor. In the severe case, in which abortion was induced, the relief of symptoms was practically immediate.

Kitasato Archives of Experimental Medicine, Tokyo

5: 1-108 (Nov.) 1922

*Biologic Study of Hemolytic Streptococci. K. Ando and N. Ito.
I. General Characteristics.—p. 1.
*II. Pathogenic and Nonpathogenic or Less Pathogenic, Hemolytic Streptococci.—p. 23.
*III. Meaning of Production of Hemolysin on the Pathogenicity.—p. 30.
*Meaning of Serum Globulin in Luetin Reaction. K. Taoka.—p. 44.
*Studies on Blood Component Necessary for Growth of Influenza Bacilli. M. Terada.—p. 62.
*Value of Plasmophagocytosis in Early Diagnosis of Typhoid. M. Ohtani.—p. 92.
*New Medium for Cultivation of Typhoid Group of Organisms in Blood. I. Otaki and C. Akimoto.—p. 101.

General Characteristics of Hemolytic Streptococci.—By means of the blood agar method (Brown's standard method) Ando and Ito have divided hemolytic streptococci into typical and atypical beta types. The typical beta type is pathogenic, while the atypical beta type is nonpathogenic or less pathogenic. The authors could not find any special relation between the morphology, the cultural characteristics on the heated blood agar, the pathogenicity and the classification.

Difference Between Typical and Atypical Types of Hemolytic Streptococci.—Ando believes that his experiment shows that there is a distinct difference in the behavior by animal passages between the typical and atypical types of hemolytic streptococci. Thus the virulence of the typical and the atypical beta types present no differences when they are examined soon after isolation or after storage for a certain period of time, but the examination of twelve strains of the atypical beta type after animal passage showed, with two exceptions, that there is no increase in virulence. On the other hand, the virulence of the typical beta type, without regard to the source of isolation, is markedly increased by animal passage. The atypical beta type was not found in an infected cavity. It has no, or very little, adaptability in contrast with the typical beta type (*a*) virulence, (*b*) by the mechanism of hemolysin production in serum free broth culture.

Meaning of Production of Hemolysin on Pathogenicity of Streptococci.—The ability to produce hemolysin, Ito says, differs markedly between the typical and atypical beta types of streptococci. He believes that these facts offer a firm basis for the conclusion that the typical beta type is pathogenic, while the atypical beta type is nonpathogenic.

Meaning of Serum Globulin in Luetin Reaction.—Experimental data have convinced Taoka that the test serum used both for the Wassermann reaction and the serum globulin reaction should be heated.

Blood Component Necessary for Growth of Influenza Bacilli.—The red blood cells are the blood component needed for the growth of the influenza bacillus, according to Terada. Fresh blood serum or plasma prevent growth. By heating these to 56 C. they are inactivated. Heating is also essential to liberate the growth promoting substance from the red blood cells. This substance is not a part of the hemoglobin. Heating whole blood to 70 C. for twenty minutes, or to 100 C. for a few minutes, destroys the growth preventing bodies in the serum and plasma and liberates the growth promoting substance from the red blood cells.

Value of Plasmophagocytosis in Early Diagnosis of Typhoid.—Ohtani is certain that plasmophagocytosis is an immune reaction. It invariably yields positive results in cases of typhoid and paratyphoid. It may be obtained early in the disease.

New Medium for Cultivation of Typhoid Group of Organisms in Blood.—Otaki and Akimoto have used successfully the following medium for culturing typhoid bacilli: meat extract, 10.0 gm.; peptone, 10.0 gm.; saponin, 1.0 gm.; sodium citrate (neutral), 20.0 gm.; water, 1,000 gm. To 5.0 c.c. of this medium 2.0 c.c. of normal or immunized rabbit blood taken by heart puncture is added. Then one platinum loopful of typhoid suspension containing 1.0 mg. of the cultures is reinoculated into Endo's medium. The number of the colonies is determined after twenty-four hours' incubation. As control, bile medium was used. It is asserted by the authors that the sodium citrate and saponin medium has the same value as the bile fluid medium. It has advantages of being cheaper and easily and simply made.

Lancet, London

March 17, 1923, **1**, No. 5194

Epithelial Tumors of Urinary Bladder. F. Kidd. (To be continued).—p. 523.
*Canned Foods in Relation to Health. W. G. Savage.—p. 527.
Traumatic Intracranial Aerocele. W. Wheeler.—p. 529.
*Surgery in Treatment of Pulmonary Tuberculosis. C. Riviere and W. H. C. Romanis.—p. 531.
Fatal Case of Syphilis of Mediastinum. H. F. Renton.—p. 534.
Roentgen-Ray Examination of Chest. B. Hudson and P. G. Sutton.—p. 535.

Canned Foods and Health.—Savage concludes that while canned foods have definite and special risks of their own, these risks are not large and, for the most part, can readily be guarded against. Compared with fresh foods, canned foods are undoubtedly safer, and popular prejudice against them is not justified. Certain improvements in manufacture, distribution, care and supervision are necessary, as has been pointed out, but these are not very considerable. No one who has studied the subject can be left in doubt as to the great value to the community of this method of preservation.

Surgery in Pulmonary Tuberculosis.—Experience has convinced Riviere and Romanis that chest operations, rapidly and skilfully carried out, under gas and oxygen anesthesia, are well tolerated by tuberculous patients, better than preconceived ideas would have suggested. For the majority of cases in which operative measures are needed for the collapse and immobilization of an adherent tuberculous lung, a well devised thoracoplasty seems to offer the best results. The operation is less severe, in skilful hands, than might be expected, and the conditions obtained are favorable for the arrest of pulmonary tuberculosis. Reactivation of the disease on the side of operation may be met by further resection of ribs, but an extension of disease in the functioning lung admits of no alleviation.

Archives Franco-Belges de Chirurgie, Brussels

February, 1923, **26**, No. 2

*Traumatic Dislocation of the Spine. A. Dhalluin.—p. 97.
*Syphilitic Disease of Long Bones. C. Dambrin and G. Miginiac.—p. 114.
*Thymectomy in Infants. A. Marique.—p. 127.
*Dissecting Osteochondritis of the Knee. J. Moreau.—p. 131.
Treatment of Traumatic Shock. G. Jeanneney.—p. 157.
Torsion of the Omentum. C. Lefebvre.—p. 176.
Homoplastic Graft in the Tibia. Vander Elst.—p. 181.

Traumatic Dislocation of the Spine.—In one of Dhalluin's three cases, the forward luxation of the fourth cervical vertebra, with quadriplegia, was a football accident. Seen sixteen hours later, attempts at reduction failed until the muscles were relaxed with chloroform. Then under traction on the head, the hands on chin and back of the neck, with counter traction to the shoulders, the head bent gently forward and then backward, the vertebra snapped into place. This was plainly heard, and a second roentgenogram, taken at once, confirmed the complete reduction. No benefit was apparent for two days but then micturition became spontaneous and the paralysis gradually subsided, although the gait was still slightly hesitating three months after the accident. In another case the lesions were extensive and proved fatal. In the third case the dislocation dorsad and laterad of the first dorsal vertebra had destroyed the cauda equina beyond repair. He emphasizes the necessity for trying to reduce the luxation of a cervical vertebra without delay. Done cautiously, there need be no fear of aggravating existing injury of the cord. It may be difficult to distinguish a luxation from a sprain or a fracture, but the indispensable roentgen rays will guide to proper treatment. The intense pain in the neck and the snapping sound at the moment of the trauma are generally recorded, and the victim falls inert, paralyzed, and sometimes unconscious.

Syphilis of the Long Bones.—A sarcoma had been diagnosed in one of the six cases described with illustrations; in another case the only symptom was a sharp pain in the bone which nothing could explain. In one child the syphilitic lesion in the bone was entirely latent. In one of the cases, spontaneous fracture of the ulna was the first sign of the lesion. "Syphilis should be suspected with every affection of every bone at all ages. Fournier used to say that syphilis loves the tibia, but this is perhaps because we are able to recognize the syphilitic nature of the affection more readily than elsewhere." Syphilis swells and thickens the bone all around. There is no actual curvature of the whole bone; the proliferating bone tissue is responsible for any curved aspect. Roentgenoscopy alone decides the exact nature.

Thymectomy in Infants.—Marique has resected the thymus in fifteen infants to relieve suffocation. One of the infants had sixteen attacks of suffocation in one night. Through a low tracheotomy incision, he incised the capsule and shelled out as much of the two lobes as possible. He did not ligate the pedicle nor close the capsule nor suture the aponeuroses. The lips of the incision were held together with clips for two days. As soon as the infant roused from the anesthetic, the parents were allowed to take it home. If the intervention is strictly on the median line, there is no loss of blood. Most of the infants were about 3 months old, and twelve of the fifteen were boys. Enough of the thymus is left to insure ample secretion, and he asserts that the operation, under chloroform, is so simple and easy that any surgeon can undertake it without fear of mishap.

Dissecting Osteochondritis of the Knee.—Moreau advocates removal of the loose body in the joint when the affection has reached this stage. Elimination of the focus of dissecting osteochondritis is almost always followed by subsidence of the disturbances in gait and the pains, even when they are of long standing. The joint resumes normal functioning, as in the boy, aged 15, whose case is described with illustrations and compared with others on record.

Encéphale, Paris

18: 1-72 (Jan.) 1923

*Mental Depression in Children. S. de Sanctis.—p. 1. Cont'd.
*Mediumic Insanity. A. Wimmer.—p. 8.
Etiologic Duality of Mania and Melancholia. P. Courbon.—p. 27.
*Improvement in Melancholia After Intercurrent Pleurisy. Usse.—p. 31.
Senile General Paresis. Riser and Gay.—p. 35.
Psychic Disturbances and Syphilis. H. et E. Biancani.—p. 40.

Dysthymic Children.—De Sanctis attributes dysthymic states (melancholia and mania) to disturbances of internal secretion and the vegetative nervous system.

Mediumic Insanity.—Wimmer publishes the histories of several cases of psychoses which occurred in spiritualism

addicts, and considers that such practices are pathogenic and not merely material accidentally available for symptoms.

Improvement After Intercurrent Infectious Disease in Case of Chronic Melancholia of Confusional Type.—Usse's patient recovered from the psychosis when serofibrinous pleurisy developed after three years in the asylum.

Journal de Chirurgie, Paris

February, 1923, **21**, No. 2

*Operative Correction of Luxation of Shoulder. L. Bazy.—p. 145.
*Ascaridiasis of Biliary Apparatus. G. L. Hartmann-Keppel.—p. 157.
*Surgical Treatment of Hydatid Cysts. M. Deniker.—p. 170.

Operative Reduction of Old Luxation of Shoulder.—Bazy's six illustrations show the various steps of the procedure for correcting inveterate antero-internal luxation of the head of the humerus. The incision must be long, with a right-angled extension at the top, like a T or inverted L, and the coracoid process must be temporarily resected and the subscapular muscle divided. Retraction of this muscle is the main obstacle to reduction of the luxation. The head is held in place by suturing the border of the subscapularis to the glenoid ligament and reattaching the muscle to the lesser tuberosity.

Ascarids in Liver and Bile Ducts.—Keppel found two female ascarids, 19 and 24 cm. long, when he opened an abscess in the left lobe of the liver in the young soldier in the army of the Orient, who recovered after evacuation of the abscess. The second patient was a girl, aged 14, with ascarid gastro-enteritis of long standing and epileptiform convulsions. Ascarid ova were found on opening the abscess in the liver. He discusses the literature on ascaridiasis of the biliary apparatus.

Surgical Treatment of Hydatid Cysts.—Deniker summarizes the communications on this subject at the Argentine medical congress, October, 1922, where it was the main topic for discussion. Most of the communications were summarized in these columns as they appeared in the Argentine medical journals.

Médecine, Paris

4: 325-400 (Feb.) 1923

French Neurology in 1922. M. Laignel-Lavastine.—p. 325.
*Cerebrospinal Fluid in Multiple Sclerosis. C. Achard and J. Thiers.—p. 330.
*Sexual Perversions and Hypergenitalism. H. Claude and Borrel.—p. 335.
*Humoral Reactions in General Paralysis. M. Klippel.—p. 339.
*Minor Pituitary Syndromes. Léopold-Lévi.—p. 342.
*Extracortical Regulatory and Psychic Centers. J. Camus.—p. 351.
*Babinski's Sign in Infantile Paralysis. A. Léri and G. Basch.—p. 358.
*The Sympathetic and Sensibility. A. Tournay.—p. 363.
New Conception of the Pyramidal Syndrome. J. A. Barré.—p. 366.
*Migraine and Anaphylaxis. P. Vallery-Radot.—p. 371.
*Near-Paranoiacs. G. Genil-Perrin.—p. 375.
Hebephrenia and Polymorphous Delirium. J. Vinchon.—p. 378.
*Treatment of Spastic Torticollis. R. Cruchet.—p. 387.
*Varicose Ulcers and Periarterial Sympathectomy. Robineau.—p. 390.
Treatment of Patients Suffering from Obsessions. P. Courbon.—p. 394.

Cerebrospinal Fluid in Multiple Sclerosis.—Achard and Thiers confirm the positive colloidal reactions in the cerebrospinal fluid of these patients, while the Wassermann reaction is usually negative. The demonstration of spirochetes may be a help in beginning atypical cases. As a rule, in multiple sclerosis, there is neither an increase in albumin nor in cells.

Sexual Perversions and Hypergenitalism.—Claude and Borrel quote some medicolegal cases of perversion to demonstrate their conviction that hypergenitalism is a frequent cause of unnatural sexual acts. This is not without importance with regard to the responsibility of these perverts.

Humoral Reactions in General Paralysis.—Klippel believes that the reactions in the serum and cerebrospinal fluid are only a very weak aid in the diagnosis of general paralysis, as he understands it. While he declares the clinical symptoms constant and characteristic, he does not find these qualities in the humoral reactions. To prove this, he reports a case, in which the Wassermann reaction, albumin content, number of cells, and the response to the benzoin test in the spinal fluid were normal. The patient was an illiterate alcoholic with loss of memory for recent facts. He denied syphilis. There was marked dysarthria, but the patient resented questions about it. The left knee-jerk was lively; Romberg's sign was negative; there were no disturbances of sensibility. The left pupil was dilated; both pupils reacted feebly to light (convergence not mentioned). He was demented or imbecile, had no hallucinations, and yet had a fixed idea to return and resume his trade of a bricklayer. Another important feature was that he ate with his hands, and drank milk directly from the bottle without using the glass. The necropsy showed a diffuse degenerative encephalitis with atrophy of the cortical cells and disseminated inflammatory foci. Klippel calls this a most typical, unmistakable case of general paralysis.

Minor Pituitary Syndromes.—Léopold-Lévi surveys the conditions which may be due to exaggerated or deficient functioning of the pituitary gland. They represent, in miniature, the great syndromes: acromegaly, gigantism, dwarfism, pituitary infantilism and the adiposogenital dystrophy, but they are often only transitory. The same subject may present several of them at the same time. He discusses the time of onset and gives a synopsis of these symptoms. Hereditary or acquired syphilis is an important etiologic factor.

Extracortical Regulating and Psychic Centers.—Camus defends his old opinion that psychic functions have extracortical regulating centers. This accounts, among other things, for the undeniable rhythms of psychic action. He quotes Ballet who considered the circular psychosis only as an enormous exaggeration of normal conditions. In his experimental work with Roussy on the centers at the base of the brain that cause diabetes insipidus, obesity, glycosuria and genital atrophy, he observed frequently marked excitation of the animals without signs of pain. The psychic changes in encephalitis point also to this extracortical localization.

Babinski's Sign in Infantile Paralysis.—Léri found Babinski's sign in about 50 per cent. of his cases of infantile paralysis. This is not surprising, if we consider that the predilection of the affection for the anterior horns of the cord is related to the distribution of the vessels. The sign is caused by spread of the process to the pyramidal tracts.

The Sympathetic and Sensibility.—Tournay reviews the old question whether the changes of sensibility after lesions of the sympathetic are of vascular origin, or are specific. In clinical cases there are attacks of pains which come in slow waves and are accompanied by changes in blood supply, secretion and local temperature. They occur almost exclusively after lesions of the median and sciatic nerve, which contain many sympathetic fibers and a special artery.

Migraine and Anaphylaxis.—Vallery-Radot believes that some migraines are anaphylactic phenomena. Cutireactions obtained by Ramirez were positive in three cases (egg white, chocolate, celery). Pagniez and Nast observed a hemoclastic crisis after ingestion of chocolate in a case in which ingestion of chocolate provoked migraine. Vallery-Radot and Pagniez have prescribed, since 1916, the use of 0.5 gm. of peptone before meals in similar conditions. Some migraines are favorably influenced, while the treatment is a complete failure in others. Other authors use subcutaneous injections of 1 c.c. of horse serum, repeated weekly, and other means of desensitization.

Near-Paranoiacs.—Genil-Perrin believes that the near-paranoiacs should be known not only to doctors, but to the whole public. Social inadaptability is the chief feature. Distrust, pride, and wrong judgment lead to delirium of interpretation. These persons are bores par excellence and not without danger to society.

Treatment of Spastic Torticollis.—Cruchet does not believe that the contractions are due to psychic causes. They should first be treated internally according to the principal cause (rheumatism, syphilis, tuberculosis). Diathermy, roentgen rays and electricity act favorably, and if this treatment fails radicular anesthesia of the corresponding cervical nerves is indicated. Injection with 60 or 70 per cent. alcohol may be tried.

Treatment of Varicose Ulcers by Periarterial Sympathectomy.—Robineau confirms the excellent results of the method, which however must sometimes be repeated because the healing process stops with the regeneration of the sympa-

thetic fibers. The immediate results are excellent—no matter where one cuts. The good results from previous methods of operation on varicose ulcers are probably also due to cutting sympathetic fibers. Nevertheless relapses occur. The ideal surgical treatment has not yet been found.

Brazil-Medico, Rio de Janeiro

1: 1-14 (Jan. 6) 1923

*The Taylor Efficiency System in Surgery. L. Ribeiro Filho.—p. 1.
*Pulsating Exophthalmos from Aneurysm. J. Santa Cecilia.—p. 4.
Enzootic Pneumonic Plague. A. Magalhães.—p. 6.
Medical Impressions of Dutch Guiana. H. C. de Souza Araujo.—p. 6.

Taylorism in Surgery.—Ribeiro relates that, when visiting the clinics of leading surgeons in Paris in 1918, he was surprised at the time wasted at operations from disregard of the principles of efficiency taught by Taylor in America and applied to surgery by R. Toupet in Paris. Ribeiro states that of those he saw, Gosset alone had systematized the work of assistants, nurses and himself; he took four minutes for a complete appendectomy.

Pulsating Exophthalmos.—The aneurysm in Santa Cecilia's case involved both the carotid artery and the cavernous sinus. A bullet had entered the ear and was removed from the nasal fossa. The aneurysm required operative relief two months later, and the right common carotid was ligated with catgut at two points. The pulsation in the eyeball ceased for a month but then returned, the catgut having evidently been absorbed. The carotid was then ligated with silk at three points. Vision declined at once after the first ligation but improved later. The exophthalmos has persisted; probably collateral circulation has developed. Ligation of the left carotid is now being considered. This is the eighth case of the kind published in Brazil, the second instance of return of the exophthalmos.

1: 69-80 (Feb. 10) 1923

*Avidity Test of Antitoxins. R. Kraus and Rocha Botelho.—p. 69.
Clinical Conception of Phobias. Areobaldo Lellis.—p. 72.
Triatoma Insect Hosts of Chagas' Disease. C. Pinto.—p. 73.
Two New Species of Triatoma. A. Neiva and C. Pinto.—p. 73.

Avidity Test of Antitoxins.—The research with scorpion and snake antitoxins reported confirms the existence of primary and secondary antitoxins. The primary (specific) antitoxin neutralizes the toxin at once; it has an immediate "avidity." The secondary, or partial antitoxins, require an hour's contact at 37 C. before neutralization is complete. The intensity of the avidity thus distinguishes the two classes. The antiscorpion serum was able to neutralize a fourfold fatal dose of snake poison (lachesis or cobra) but only after an hour's incubation.

1: 125-140 (March 10) 1923

*Syphilitic Encephalitis of Base. H. Roxo.—p. 125.
Operation for Pterygium. Abreu Fialho.—p. 129.

Syphilitic Encephalitis of the Base.—The man, aged 30, had been under treatment for symptoms suggesting a tumor at the base of the brain. They differed from the classic picture in certain respects, and the Wassermann reaction in the spinal fluid proved positive on one occasion, although consistently negative both in blood and fluid at other times. Recovery took place under antisyphilitic treatment and the case was retrospectively diagnosed as a gummatous inflammation in the meninges and brain, the gummatous infiltration spreading like a drop of oil, but the meningo-encephalitis finally yielding to treatment.

Repertorio de Medicina y Cirugía, Bogota

14: 43-83 (Nov.) 1922

*Lumbar Puncture in General Paralysis. M. Rueda.—p. 47.
Blastomycosis in Colombia. A. Peña Chavarria.—p. 52. Cont'n.
*Uremia in Psychopathies. G. Uribe M.—p. 71.

Lumbar Puncture in General Paralysis.—Rueda reports that in 9 patients with general paralysis notable improvement followed withdrawal of from 70 to 80 c.c. of cerebrospinal fluid; in 4 the benefit was equally prompt but not so marked; in 8 there was only slight improvement; in 11 no benefit was apparent, and 2 other patients died a few days after the intervention. In the cases with pronounced improvement the spinal fluid was under high pressure. The mental faculties seemed to return completely to normal, but in from six months to a year all cases developed dementia without gatism, although some had lost control of the sphincters when first seen.

Uremia in Mental Affections.—Uribe remarks that urea excretion in Colombia averages lower than in Europe. In hospital patients the urea content of the urine averaged only from 9.5 to 11.4 parts per thousand, and of the blood, below 0.35; any figure above this may be considered pathologic in Colombia. He tabulates the findings in thirty patients with various psychopathies; the urea content of the blood was always high in the severer cases and in the exacerbations of all forms. In one case of a confusional psychopathy with stupor, the blood contained 0.56 per thousand but as the patient improved, it dropped to 0.32. The melancholia cases always showed a tendency to azotemia.

Siglo Médico, Madrid

71: 73-94 (Jan. 27) 1923

*Present Conceptions of Neutropism. S. J. Tello.—p. 73. Cont'd.
*Pathogenesis of Cholelithiasis. C. Blanco Soler.—p. 77. Conc'n No. 3608, p. 108.

Neurotropism.—This is a review of international literature on this subject, with report of original work, the whole forming Tello's maiden address on entering the National Academy of Medicine, with a reply by Cajal. It is being published in short instalments.

Pathogenesis of Gallstones.—Blanco Soler regards pregnancy, insufficiency of the liver, endocrine derangement and constipation as the most important of the many causes that cooperate in producing cholelithiasis. Pregnancy favors production of gallstones by excessive cholesterin content in the blood, overwork by the liver, and endocrine disturbance. The last is nearly always of the type of hypothyroidism with changes in the ovaries. He asserts that chronic constipation is often connected with defective thyroid functioning, and is an important factor in gallstone production. Emotional stress is a factor at times in bringing on gallstone colic; he cites a number of convincing cases from his own experience in illustration. The tendency to gallstones belongs with the arthritis group, with sluggish metabolism and elimination; but Soler does not ascribe to stomach derangement the importance that some claim for it as a factor in cholelithiasis. Gastric secretion was normal in ten gallstone patients; there was hyperacidity in seven and hypacidity in six. Excessive thyroid functioning is rare with gallstones, but when this combination occurs it is exceptionally amenable to treatment.

71: 97-120 (Feb. 3) 1923

*Experiences with Strabismus Operations. M. Marin Amat.—p. 97.

Operative Treatment of Squint.—Marin Amat shortens the external rectus and tenotomizes the internal rectus in the divergent eye in concomitant strabismus. He also shortens the external rectus of the normal eye though less than in the divergent eye. The results have been perfect, he says, in the sixteen cases thus treated. The visual acuity has improved in all, in addition to the esthetic improvement. He claims credit to the Spanish school for the progress made by Blanco of Valencia in 1910 by treating squint by severing and shortening the muscle without resection. The superfluous portion is superposed and the normal attachment of the muscle is thus retained. The methods of Duverger and others and of Marin Amat himself are only modifications of this.

Archiv für Gynäkologie, Berlin

118: 1-228 (March 17) 1923

*Action of Roentgen Rays on Early Pregnancy. B. A. Archangelsky.—p. 1.
*Nonprotein Nitrogen in Parturients. K. Hellmuth.—p. 18.
*Cancer of Female Sex Organs. S. Peller.—p. 59.
Primary Placenta Isthmica. M. Walthard.—p. 101.
Structure of the Placenta. J. Wieloch.—p. 112.
*Treatment of Placenta Praevia. H. Gänssle.—p. 120.
Genesis of Tuberculosis of the Ovary. E. Wertheimer.—p. 136
*Aneurysm of Splenic Artery. K. Lundwall and A. Gödl.—p. 177.
The Breus' Mole Question. E. Kahn.—p. 185.
Corpus Luteum Hemorrhages. N. C. Louros.—p. 194.
Obstetric Inversion of Uterus. H. Küstner.—p. 203.
Chorio-Epithelioma: Two Cases. Fohr and Kratzeisen.—p. 210.
Lymphangioma of Fallopian Tube. H. A. Dietrich.—p. 224.

Action of Roentgen Rays on Early Pregnancy.—Archangelsky states that it seems to be established that the action of the roentgen rays is felt most intensely by tissues of the embryonal type, that is, the least differentiated tissues, and by young cells just formed from the fission of the mother cell, and further by tissues during the period of the most active cell segmentation. This explains the difference in the action of the rays according to the stage of the pregnancy in women and in animals. In seven women irradiated from eight to fourteen days after the date when menstruation should have occurred, the pregnancy was interrupted easily and menstruation reestablished. In three other women, conditions were the same, except that the pregnancy was of longer duration, up to thirty-five days. The irradiation did not arrest the pregnancy, and further measures were necessary to procure abortion.

Nonprotein Nitrogen in Parturients.—Hellmuth tabulates the metabolic findings in a number of healthy parturients and others with eclampsia or other pregnancy toxicosis. He declares that many of the reports in the literature in this line are based on defective technic or erroneous conclusions. The nonprotein nitrogen was not found materially above normal even at the height of eclampsia and pregnancy nephrosis, but the urea content of the blood was higher, both absolutely and relatively to the nonprotein nitrogen. Abnormally large proportions of urea in the blood seem to be the most sensitive indicator for kidney injury late in pregnancy and in childbed.

Cancer of Female Sex Organs in Relation to Pregnancy.—Peller comments on the increase in recent years of the cases of cancer in men, but ascribes this to the improved diagnosis of cancer of the digestive tract. His comparison of statistics from different countries fails to show any connection between deaths from cancer of the genital apparatus and the number of children borne. The ratio between cancer of the mamma and of the uterus does not seem to be dependent on the number of children. He reviews 2,700 cases of cancer in women and 1,600 in men at Vienna, and 406 women with myomas. Nothing was found to indicate any connection between abortion and cancer of the genital apparatus. But cancer in nulliparous women was less often located in the cervix. Even a single pregnancy was enough to upset this proportion between cancer of the cervix and elsewhere in the uterus. The proportion of unmarried women in the whole cancer material is less than corresponds to the proportion of the unmarried in the general population. He classifies the material in thirty-eight tables, and outlines a blank for collecting comparative data.

Treatment of Placenta Praevia.—Gänssle delivered ninety-three women with placenta praevia by the vaginal route, with 8.6 per cent. mortality: two succumbed to infection and one to embolism. The mortality in ninety-three others delivered by cesarean section was 6.4 per cent. This includes fifty-two with intraperitoneal cervical section with a mortality of 5.8 per cent. For infected cases and those with a nonviable child, vaginal delivery is preferred.

Aneurysm of Splenic Artery.—The aneurysm ruptured at the ninth month of pregnancy, with fatal hemorrhage.

Beiträge zur klinischen Chirurgie, Tübingen

1923, **128**, No. 2

*Means to Influence Secretion of Bile. O. Specht.—p. 249.
*Surgery of the Spleen. H. Herfarth.—p. 284.
*Cancer of Mouth and Throat. L. Heidrich.—p. 310.
Mechanical Processes in Concussion of Brain. F. Genewein.—p. 348.
Operation for Esophagus Diverticulum. W. Dürr.—p. 366.
Appendicitis and the Weather: No Connection. Forster.—p. 377.
*Surgery and Kidney Function Tests. W. Peters.—p. 395.
*Surgical Treatment of Acute Nephritis. M. Krabbel.—p. 425.
*Pyelography. I. Szabó.—p. 433.
*Closure of Artificial Anus. H. Knaus.—p. 441.
*The Ovary in a Hernia. A. Schönmeier.—p. 451.
Traumatic Slits in Transverse Mesocolon. E. Hesse.—p. 461.
Deformity of Sacrum with Atresia of Anus and Vagina. Lentz.—p. 471.
*Subphrenic Abscess. M. Baumann.—p. 477.
Embryology of Suprapatellar Bursa. J. Hohlbaum.—p. 481.
*Outcome of Arthrodesis by Cramer Method. W. Lasker.—p. 499.
*Pulmonary Embolism with Bismuth Paste. A. Leb.—p. 515.

Means to Influence Secretion of Bile.—In this first report of his research on dogs, Specht relates the results of intake of fluids and of extracts of endocrine glands, after discussing what has already been published by others on the influence of the circulation and nervous system on bile secretion. His tables show that the bile keeps remarkably constant in its composition, uninfluenced by fluids, organ extracts or salts, but intake of meat increases the output of bile.

Surgery of the Spleen.—Herfarth reports the ultimate outcome in more than 58 operations on the spleen for rupture, leukemia, Banti's disease, hemolytic jaundice, pernicious anemia or other indication. In one case the threatening intra-abdominal hemorrhage did not occur until the day after the contusion. Splenectomy in 3 of the 4 operative cases of Banti's disease was followed by recovery. He comments that splenectomy seems at present to be the most promising treatment for this disease. In the 7 operative cases of pernicious anemia, 57 per cent. seem to be cured for the time being. The proportion of cures would undoubtedly be larger if the surgeon were called in earlier, after failure of other measures, but before the hemoglobin goes below 20 per cent. The results were very good in his 2 cases of hemolytic jaundice.

Cancer in Mucosa of Mouth and Throat.—Heidrich reviews experiences with 155 cases of cancer of the tongue, 49 of the tonsils, 35 of the floor of the mouth, 15 of the cheek, and 12 of the palate, all given operative treatment. Recovery free from recurrence for more than three years to date is recorded in more than 17 per cent. in the first group, 11 in the second, 7.7 in the tonsil group, 33.4 per cent. in the cheek and 25 in the palate group. An exploratory excision early in every case of ulceration in the mouth should be followed by an early removal of the growth far into sound tissue. The experiences with radiotherapy are still too new for reliance to be placed on this treatment.

Tests of Functional Capacity of the Kidneys in Relation to Surgery.—Peters analyzes the functional findings as compared with the operative findings and the ultimate condition in all the operative kidney cases in the last ten years in Garré's service. He also gives the results of research along these lines in dogs. He emphasizes that we must not expect too much of these methods of investigation, but regard them as merely supplementing the clinical findings. The functional tests reveal a limitation of the functioning part of the kidney, but throw no light on its nature. He warns further that a diseased kidney may respond apparently normally to tests, while there may be transient disturbance, even complete loss of kidney functioning, in hysteria, acute nephroses, glaucoma of the kidney, and with calculi in kidney or ureter—probably from the ischemia of the kidney vessels of reflex origin.

Surgical Treatment of Acute Nephritis.—Krabbel has operated in three cases of eclampsia, as he describes, with prompt recovery; also in a case of kidney calculus with colic, and in two cases of abscesses in the kidney. In all these cases rapid recovery followed the intervention.

Pyelography.—Szabó concludes from his seventy cases of pyelography in 1921 that a 20 per cent. solution of potassium bromid can be regarded as harmless and effectual for pyelography. He applies the procedure more extensively than others, using it to aid differential diagnosis not only of kidney diseases but of other abdominal lesions.

Closing an Artificial Anus.—Knaus cuts the spur at a single sitting, by Hacker's technic, and extols the advantages of this over crushing it, especially for much debilitated patients. Four cases are compared with two others in which a different technic was applied.

Ovary in Hernia.—In a case described and in four similar ones on record the round ligament was responsible for the displacement of the adnexa. The mechanism is like that impeding descent of the testes. In another group of cases, fluctuations in intra-abdominal pressure or the weight of the ovary were the main factors.

Subphrenic Abscess.—Baumann states that in one of his three latest cases of this kind, the abscess had developed secondary to a gastric ulcer, and general sepsis proved fatal. This insidious septic course was evident also in the second case, following acute appendicitis. A fistula persisted for two years after operative evacuation of the space. In the third case the subphrenic abscess developed in connection

with traumatic rupture of the liver. In both the last mentioned cases there was diphtheritic infection of the wound.

Cramer's Operation for Arthrodesis.—Lasker concludes from his four patients reexamined more than three, nine, ten and eleven years after the operation that the Cramer method gives durable results. Both functionally and with radiography the outcome is satisfactory. He urges the use of a stout piece of bone as this takes longer to be absorbed, and gives greater strength to the joint at the time and later.

Pulmonary Embolism After Injection of Bismuth Paste.—The paste had been injected into a fistula left by an operation for goiter seven weeks before. About 10 c.c. of the 30 per cent. bismuth paste was injected into the fistula after it had been curetted. Cyanosis, shallow breathing, small rapid pulse and extreme depression followed almost at once. Roentgenoscopy showed very little of the bismuth left in the fistula while it could be seen scattered throughout the lungs, with a large deposit at the right main trunk of the pulmonary artery. Bilateral pleurisy developed but the bismuth shadows gradually cleared up and the temperature returned to normal the fifteenth day. The patient left the hospital in good subjective condition the thirty-eighth day. The bismuth paste had evidently been taken up by the veins left gaping by the curetting, and had been carried to the right heart and distributed thence through the lower lobes of the lung. As the lungs were normal, there was no infarction. The acute increase in pressure in the lesser circulation from the obstruction of the arteries was combated with digitalis every three hours and three injections daily of caffein.

Jahrbuch für Kinderheilkunde, Berlin

January, 1923, **100**, No. 5-6

*Vitamin in Fresh and Conserved Vegetables. R. Gralka.—p. 265.
*Pathogenesis of Acute Nutritional Disturbance in Infants. VI to IX. P. Hoffmann and S. Rosenbaum.—p. 281.
*Heart Function after Infectious Diseases. D. Lebedev.—p. 295.
*Differentiation of Tubercle Bacilli in Urine. D. Lebedev.—p. 312.
*Myxedema and Pituitary. A Roggen.—p. 317.
*Herpes Zoster and Varicella. Z. v. Barabás.—p. 331.

Comparison of Antiscorbutic Vitamin in Fresh and Conserved Vegetables.—Gralka found in experiments on guinea-pigs that only fresh vegetables prevent scurvy. Every attempt to preserve them failed. Drying seems to destroy the action entirely.

Action of Amino-Acids on the Stomach Function in Infants.—Hoffman and Rosenbaum found that tyrosin, asparagin and leucin have the same influence on gastric evacuation and secretion as protein solutions, when given in the same concentration. Cow's milk has a stronger combining power with hydrochloric acid, but this property bears no relation to its stimulating action on the gastric secretion. Infections retard and reduce gastric secretion.

Heart Function of Children After Infectious Diseases.—Lebedev found sometimes in children convalescing from infectious diseases that the arrhythmia persisted even with accelerated pulse rate, and it did not seem to depend on the respiration. He also found parasternal dulness between the second and third ribs after practically all of the infectious diseases. He attributes it to the lack of elasticity of the heart. After the stage of hyperemia of the skin in pneumonia and influenza, he observed that the white spot after pressure by a finger does not disappear as quickly as usual. He explains it by a paresis of the skin vessels.

Differentiation Between Tubercle Bacilli and Smegma Bacilli in the Urinary Sediment.—Lebedev recommends Spengler's method of counterstaining. Nikitin's solution, consisting of 2 parts of glacial acetic acid and 1 part of a 10 per cent. alcoholic solution of acetone, decolorizes smegma bacilli in three minutes, but leaves the tubercle bacilli stained for ten or fifteen minutes.

Myxedema and Pituitary.—Roggen did not find signs of constant changes of the pituitary in congenital or acquired deficiencies of the thyroid gland. Only if the loss of the functioning of the thyroid is gradual, are changes in the pituitary found with any frequency.

Relation Between Varicella and Herpes Zoster.—Barabás reports two cases of varicella with one of herpes zoster in the same family at the same time. In another family one child had herpes zoster eight months after an attack of varicella. In still another family a child had varicella nine months after herpes zoster.

Zeitschrift für Krebsforschung, Berlin

February, 1923, **19**, No. 5-6

*Blood Diseases in Relation to Tumors. H. Hirschfeld.—p. 269.
*Prevalence of Cancer at Jena. G. Bilz.—p. 282.
*Spontaneous Cancers in Wild Rats. M. Beatti.—p. 325.
Sarcomatosis of Domestic Hen. A. Ladwig.—p. 337.
*Organotherapy of Malignant Disease. D. Engel.—p. 339.
Production of Experimental Tar Cancers. L. Halberstaedter.—p. 381.
Histologic Research on Origin of Tar Cancers. E. Möller.—p. 393.

Blood Diseases and Tumors.—Hirschfeld accepts Orth's term hemoblastosis to designate generalized hyperplastic affections of the blood-producing apparatus. He attempts to classify them, and explains the whole field as lying between true tumors and hyperplastic systemic affections in general.

Cancer at Jena.—Bilz relates that between 1910 and 1920 42 per cent. of the 11,092 deaths at Jena were followed by necropsy. Cancer was found in 17.42 per cent. of all cadavers over the age of 20 in the first five years, and in 14.44 per cent. in the last five years. In 30 per cent. of the cancer cases the stomach was the seat of the malignant disease; the intestines in 16 per cent.; the female genitals in 13 per cent., and the esophagus in 10 per cent. The 700 cancer cases included only 257 women. The diagnosis of malignant disease had been made in 94.28 per cent. and correctly made in 80 per cent., while the cancer had not been correctly located in 10.91 per cent., and in 9.09 per cent. the actual tumor had been overlooked.

Spontaneous Cancers in Wild Rats.—Beatti reports from Buenos Aires some new instances of spontaneous tumors in wild rats. One rat had sarcomatosis of the abdomen with metastasis in the lung, a carcinoma of the mamma, and a cutaneous fibroma. Two others had epitheliomas in the liver or stomach evidently caused by a nematode, probably *Hepaticola hepatica*.

Treatment of Tumors with Endocrine Extracts.—Engel reiterates that in our research on cancer as a local affection we overlook the organism as a whole, and yet this is what determines whether malignant disease is to develop or not. He cites, for example, Rüder's report of a family in which all the seven boys developed epithelioma of the skin between the ages of 5 months and 10 years (the grandfather had had the same disease), while the five girls in the family escaped it. Hedinger found primary carcinoma of the liver at necropsy in two sisters. A connection between the predisposition to cancer, the constitution and the endocrine system seems to be beyond question when such happenings are considered. Especially if we regard them from the standpoint of Freund and Kaminer's assertions that the serum and organs of cancer subjects do not destroy carcinoma cells as do the serum and organs of the noncancerous. They demonstrated further that this faculty is twenty-one times more potent in the serum of infants than of adults, and they traced this to the thymus, the potency declining as the thymus retrogresses. Engel has been experimenting with the protein products of endocrine glands, Abderhalden's optones. He injected this fluid subcutaneously into mice at points remote from the experimental inoculations. His research thus throws light on the potency of the protein products of the different endocrine glands and on the influence of the different glands on tumor production and inhibition. The pituitary seems to promote tumor growth, while the thyroid, and above all the thymus, check it. The elements responsible for this action seem to be the protein products in far advanced retrograde metabolism. Testes and ovaries were found inert. Ovariectomy in inoperable cancer of the mamma is justified by the stimulation of the thymus that results.

Zeitschrift für Urologie, Leipzig

1923, **17**, No. 1

*Extirpation of Carcinomatous Bladder. V. Schmieden.—p. 1.
*The Milking Function of the Calices of the Kidney. Westenhöfer.—p. 5.
Clinical Aspect and Treatment of Nephroptosis. Fedoroff.—p. 7.
Pyelonephrolithotomy. Casper.—p. 20.

Foreign Body in Bladder. W. Hofmann.—p. 22.
Hematuria and Appendicitis. J. J. Stutzin.—p. 25.
Diagnostic Puncture of Testis. Posner.—p. 27.
Hemangioma of the Bladder. A. Hübner.—p. 29.
*Peritonitis in Bladder Disease. J. Bitschai.—p. 32.
Self-Inflicted Injury of Penis. Stutzin.—p. 37.
*Addison's Disease. H. Peiper.—p. 40.
Sickness and Death of Emperor Charles VII. E. Ebstein.—p. 50.
Relations Between Bladder and Kidneys. Armbruster.—p. 55.

Advanced Cancer of the Bladder.—Schmieden recommends the formation of an artificial anus and isolation of the rectum, in which he implants the ureters, to serve as a new bladder. He regards these measures as essential to ward off or cure ascending pyelitis after extensive extirpation of the bladder with advanced malignant disease. Of the two patients treated in this way, the man is still at work in the aniline dye establishment, working six hours a day. The interval since the operation is eighteen months. The woman died from pneumonia five months after the operation.

The Milking Calices of the Kidney.—Westenhöfer brings evidence that Haebler's work on the aspiration of urine from the parenchyma of the kidney by the milking action of the calices of the kidney was done on his suggestion. His priority is reluctantly admitted by Haebler and Ringleb in the society discussion on page 26.

Peritonitis with Bladder Disease.—Bitschai's patient with hypertrophied prostate died from peritonitis following cystitis, without perforation of the bladder walls.

Diagnosis and Operative Treatment of Addison's Disease.—Peiper recommends roentgen-ray examination of the kidney region after insufflation of oxygen into the bed of the kidney. He advocates removal when the suprarenal capsule is the seat of a unilateral tuberculous process.

Zentralblatt für Chirurgie, Leipzig

50: 329-376 (March 3) 1923

*Weight-Bearing Capacity of Amputation Stumps. Kölliker.—p. 330.
Splint in Pirogoff and Hallux Valgus Operation. D. Kulenkampff.—p. 331.
A Peculiar Affection of Costal Cartilages. Harttung.—p. 333.
Extrapleural and Extraperitoneal Access to Suprarenals Through the Diaphragm. A. Melnikoff.—p. 336.
Large Hepatic Cyst with Double Hepatic Ducts Cured by Operation. E. Elischer.—p. 341.
*Incision for Operations on Gallbladder. H. Simon.—p. 345.

Weight-Bearing Capacity of Amputation Stumps.—Kölliker reviews the weight-bearing capacity of the amputation stumps of the war. Of 104 thigh amputations, 2 presented good weight-bearing stumps, 4 were partially weight-bearing (that is, a prosthetic apparatus could be worn part of the time, but if worn continually, soreness resulted), 90 stumps were not weight-bearing, and 8 had never been tested for their weight-bearing capacity. Of 12 amputations by the Gritti method, 8 stumps were weight-bearing, 1 partially weight-bearing, 2 were not weight-bearing, and in one instance the weight-bearing capacity had never been tested. One amputation stump (Sabanejeff) was weight-bearing. In 69 amputations of the lower leg, there were 5 weight-bearing stumps, 3 partially weight-bearing and 61 not weight-bearing. The causes of the lack of weight-bearing capacity were: "bone scars" in 80 cases, soft part scars in 32 cases, neuromas in 18 cases, conical stumps in 14 cases, and in 19 cases there was a combination of causes. Kölliker admits that the results are far from pleasing, but thinks that if the methods of Bier, Bunge and Hirsch are used and there is more cooperation between the surgeon and the manufacturer of prosthetic apparatus, better results will be secured in the future.

Incision for Operations in Region of Gallbladder.—On the basis of his experience in twenty cholecystectomies, Simon recommends a simple median, longitudinal incision just above the umbilicus without division or incision of the rectus sheath. The results have been uniformly good. The avoidance of the division of the rectus has many advantages.

Polska Gazeta Lekarska, Lwow

1: 621-636 (July 30) 1922

*Retroflexion of the Uterus. W. Falgowski.—p. 621.
Auto-Hemotherapy in Pruritic Skin Diseases. T. Dybowski.—p. 623.
Cont'd.
Serotherapy of Influenza. H. Kadysz.—p. 626.
Typhus Fever. J. Grek.—p. 626.

Surgical Treatment of Retroflexion of Uterus.—Falgowski says that at the Fifth International Gynecologic Congress at Petrograd, Van der Velde enumerated 217 different methods (old and new) for the surgical treatment of retroflexion of the uterus. The reason for the existence of so many methods of meeting this condition, according to Falgowski, is that none can meet all requirements. Each case presents its own special indications that must be met. He considers the Alexander-Adams the best general method. Bad results, he says, come not from faulty technic of the method, but from the faulty conception of indications by the surgeon. As the next congress, which will be held in New York, will again discuss this question, Falgowski tries to help solve this question in the following way: First, he classifies the condition of retroflexion of the uterus into: (1) movable retroflexion without clinical symptoms; (2) retroflexion of a small, movable uterus with clinical symptoms, but with normal adnexa; (3) retroflexion of a heavy uterus, enlarged by inflammation (metritis); (4) retroflexion with adhesions to adnexa; (5) retroflexion with old tears of perineum and vagina (this also includes retroflexion with prolapse of the vagina); (6) retroflexion with anterior fixation of vaginal part of the uterus (faulty development). Each of the above types presents its own indications, which must be considered in treatment. Falgowski discusses each type separately, outlining what he considers the best method of treatment to meet all conditions.

Acta Medica Scandinavica, Stockholm

1922, **57,** Supplement No. 3

*Transactions of Scandinavian Internal Medicine Congress.—pp. 1-311.

Transactions of the Tenth Internal Medicine Congress of the Northland.—The leading addresses at this meeting at Helsingfors in June, 1921, have been summarized as they were published in the Scandinavian medical journals. This bulky volume contains all the others and the discussions. All articles are in English, French or German.

Norsk Magazin for Lægevidenskaben, Christiania

March, 1923, **84,** No. 3

*Development of Ophthalmology in Norway. S. Hagen.—p. 193.
*Hyperplastic Disease of Blood-Producing Apparatus. F. Harbitz.—p. 211.
*Scrap of Indelible Pencil as Foreign Body. P. Bull.—p. 221.
*Huge Kidney Tumor. P Bull.—p. 223.
Experiences with Epidemic Encephalitis at Vienna. Zeiner-Henriksen.—p. 229.
Present Status of Research on the Thyroid and Pituitary in Tadpoles. V. Magnus.—p. 244.

Ophthalmology in Norway.—Hagen gives a history of the pioneers in ophthalmology in Norway. It was Hjort who discarded the bandage for the eye after operations. This was in 1896, and at once, he said, infection vanished as if by magic.

Hyperplastic Disease in the Blood-Producing Organs.—Harbitz gives colored plates of the findings in two new-born infants with ascites and foci of incompletely developed blood corpuscles, representing a kind of myelo-erythroblastosis. The third case described was in a woman, aged 51, with multiple myelomas, actual erythromyeloblastomas. He suggests the possibility of a connection between these different processes.

Injury from Indelible Pencil.—Bull adds two more cases to the few on record in which the tip of an indelible pencil was broken off in the tissues (hand and heel in his cases). The anilin dyestuff used in the pencil has a toxic action, and this may keep up for weeks and months until the whole system is saturated with it. Although apparently a harmless lesion, he urges prompt excision of the tissues containing the pencil tip as the only means to ward off serious trouble.

Huge Kidney Tumor.—Bull relates that the woman, aged 39, had had blood in the urine at times for six years while the tumor in the right kidney was growing. It proved to be an atypical hypernephroma, and weighed 10.7 kg. (more than 23 pounds). She has been in florid health since its removal.